# Practical Guide to Public Private Partnership (PPP) Projects

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# PREFACE

Traditionally qualified surveyors offer a full range of professional services for property and infrastructure projects, starting from the project inception to its completion as well as management of the resultant facilities. While traditional procurement approaches are still widely adopted for most major projects, public private partnerships are increasingly being used in various countries as an alternative approach to the procurement of public facilities and/or services based upon a partnership between the public and private sectors. As stated by Mr. Donald Tsang, the Chief Secretary for Administration of the HKSAR Government, "the Government is facing a conundrum; on the one hand, we are experiencing major budgetary pressures yet, on the other hand, we remain subject to demands for more and better public services. A key part of the solution is to enhance radically the use of the private sector in delivering government services". Projects that have successfully adopted the PPP approach in other countries (e.g. the United Kingdom, Canada, Australia and Japan, etc.) include housing, hospital, school, police station, prison, transport, waste, leisure and culture projects. Thus, its prospective application is vast.

While qualified surveyors in other countries (e.g. United Kingdom) play a leading professional consultancy role in PPP projects, Hong Kong surveyors generally have little knowledge and practical experience in this fast growing procurement approach. As there will be PPP projects in both Hong Kong and Mainland, it is essential that professional surveyors should upkeep their professional knowledge in this significant area. Nevertheless PPP is still relatively new in Hong Kong. It is therefore essential that a local practical guide to PPP projects is developed in order to enhance the professional services of qualified surveyors and other related professionals such as architects, engineers, developers, etc.

Paul H K Ho

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# CHAPTER 1

# INTRODUCTION TO BASIC CONCEPTS OF PUBLIC PRIVATE PARTNERSHIPS

## INTRODUCTION

Traditionally, qualified surveyors offer, individually or in collaboration with others, a full range of professional services for built facilities, starting from the project inception to its completion (including land acquisition, design and construction) as well as management of the resultant facilities. While traditional procurement approaches are still widely adopted for most major projects, public private partnerships (PPPs) are increasingly being used in various countries as an alternative approach to the procurement of public facilities and/or services based upon a partnership between the public and private sectors.

As stated by Mr. Donald Tsang (HKSAR, 2003), the Chief Executive of the HKSAR Government, "the Government is facing a conundrum; on the one hand, we are experiencing major budgetary pressures yet, on the other hand, we remain subject to demands for more and better public services. A key part of the solution is to enhance radically the use of the private sector in delivering government services". Thus, where public sector capital budgets are constrained, there are obvious advantages in adopting PPP to deliver public services that might otherwise be unaffordable to the government.

## DEFINITIONS OF PUBLIC PRIVATE PARTNERSHIPS

There is no universal definition of PPPs as different countries may have different models. The Canadian Council for Public Private Partnerships defines PPPs as a cooperative venture between the public and private sectors, built on the expertise of each partner that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards.

In German, the Federal Report on PPP in Public Real Estate commissioned by the German Federal Department of Transportation, Construction and Real Estate (2003) defines PPPs as a long-term, contractually regulated co-operation between the public and private sector for the efficient fulfillment of public tasks in combing the necessary resources (e.g. how-how, operational funds, capital, personnel) of the partners and distributing existing project risks appropriately according to the risk management competence of the project partners (Alfen et al., 2009).

In the United Kingdom, PPPs include Private Finance Initiative (PFI) and other arrangements where the public sector contracts to purchase quality services on a long-term basis to take advantage of private sector management skills. These include concessions and franchises, where a private sector partner takes on the responsibility for providing public services, including planning, designing, financing, constructing, operating and maintaining the specified services (HM Treasury, 2003).

The key features of most PPP projects are as follows:

- A private sector partner invests in public infrastructure facilities, and provides related non-core services to the public sector client or the community,
- The public sector client retains ultimate responsibility/accountability for the delivery of the underlying core services to the public,
- The public sector client and private sector partner work together under a long-term contract, whereby the payment to the private sector partner is spread over the term of the contract and is made only to the extent that the required outputs are maintained to the specified service standards.

**ADVANTAGES OF PPPs**

PPPs, operating at the boundary between the public and private sectors, are neither nationalized nor privatized services, but represent an alternative way in which the government may deliver some public services. International experience suggests that the use of PPP approaches can deliver a number of advantages including:

- Acceleration of providing the necessary service: PPPs often allow the public sector client to translate upfront capital expenditure into a flow of ongoing service payments. This enables projects to proceed when the availability of public capital is constrained, thus bringing forward much needed public services.
- Faster implementation: The allocation of design and construction responsibility to the private sector, combined with payments linked to the availability of a service, provides significant incentives for the private sector to deliver the project within a shorter construction period.
- Reduced whole life costs: PPP projects which includes operational and maintenance services provide a strong incentive for the private sector to minimize costs over the whole life of a project which is difficult to achieve within the traditional public sector procurement.
- Better risk allocation: A core principle of any PPP approaches is the allocation of risk to the party best able to manage it at least cost. The approach of optimizing rather than maximizing risk transfer can ensure that best value is achieved.
- Better incentives to perform: The allocation of project risk can provide incentives to the private sector to improve its management and performance on any given project. This is because full payment to the private sector will only occur if the required service standards are being met on an ongoing basis.

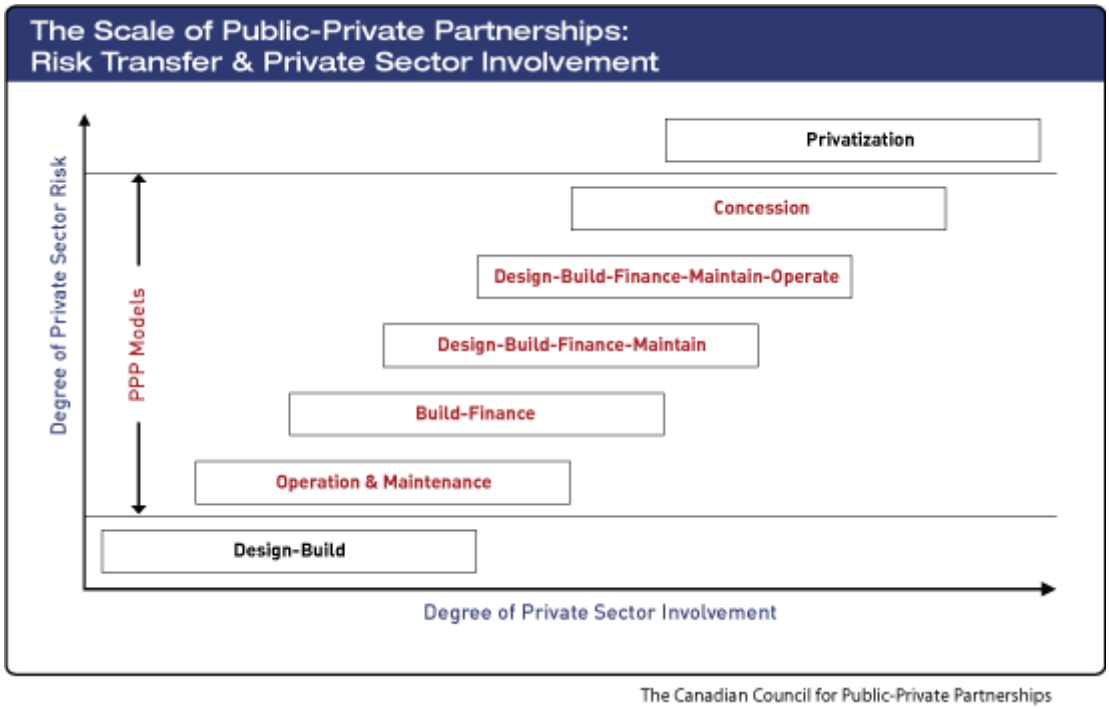
- Improved quality of service: International experience suggests that the quality of service achieved under a PPP approach is often better than that achieved by traditional procurement. This may reflect the better integration of services, improved economies of scale, innovation in service delivery, or performance incentives and penalties typically included within a PPP contract.
- Generation of additional revenues: The private sector may be able to generate additional revenues from the third parties, thereby reducing the cost of any public sector subvention required. Additional revenue may be generated through the use of spare capacity or the disposal of surplus assets.
- Enhanced public management: By transferring responsibility to the private sector, the public sector will act as regulators and will focus upon service planning and performance monitoring instead of the management of the day-to-day delivery of public services. In addition, by exposing public services to competition, PPPs enable the cost of public services to be benchmarked against market standards to ensure that the very best value for money is being achieved.

## TYPICAL MODELS OF PPP PROJECTS

The PPP model is very flexible and is found in a variety of forms. In Canada, the commonly used partnership agreements may include the followings:

- Operation and maintenance contract (O & M): A private sector operator, under contract, operates a publicly-owned facility for a specified term. Ownership of the facility remains with the public sector.
- Design – build – finance - operate (DBFO): The private sector designs, finances and constructs a new facility under a long-term lease, and operates the facility during the term of the lease. The private sector transfers the new facility to the public sector at the end of the lease term.
- Build – own - operate (BOO): The private sector finances, builds, owns and operates a facility in perpetuity. The public constraints are stated in the original agreement and through on-going regulatory authority.
- Build – own – operate - transfer (BOOT): A private sector receives a franchise to finance, design, build and operate a facility (and to charge user fees) for a specified period, after which ownership is transferred back to the public sector.
- Buy – build - operate (BBO): Transfer of a public asset to a private or quasi-public entity usually under contract that the facilities are to be upgraded and operated for a specified period of time. Public control is exercised through the contract at the time of transfer.

Within the above spectrum, PPPs can be categorized based on the extent of public and private sector involvement and the degree of risk allocation. A simplified spectrum of PPP models used in Canada is shown as follows:




Source: The Canadian Council for Public Private Partnerships

However, there are different and also similar approaches in the United Kingdom, Depending on the levels of involvement and responsibility of public and private sector, PPPs can be classified into the following forms:

- Creating wider markets: Launching new initiatives using private sector skills and finance to utilise the assets of the public sector, both physical and intellectual.
- Private finance initiatives (PFI): The public sector contracts to purchase quality services, with defined outputs, on a long-term basis. This includes the private sector maintaining or constructing the necessary infrastructure. The term also covers financially freestanding projects where the private sector supplier designs, builds, finances and then operates an asset and covers the costs through direct charges on the users of the asset. Public sector involvement is limited to assistance with planning, licensing and other statutory procedures.
- Joint venture: Partnerships in which public and private sector partners pool their assets, finance and expertise under joint management, to deliver long term growth in value for both partners.
- Partnership companies: Introducing private sector ownership into state-owned businesses, while preserving the public interest and public policy objectives, through legislation, regulation, partnership agreements, or retention of a special government share.
- Partnership investments: Partnerships in which the public sector contributes to the funding of investment projects by private sector parties, to ensure that the public sector shares in the return generated by these investments.
- Franchises: A concession awarded by the government to a private sector partner to provide a public service for an agreed period. The private sector partner pays

a fee during this period for the revenue (or a share of the revenue) that the service generates.

Many major PPP projects are usually run by a consortium company (special purpose vehicle) owned by one or more equity investors (see figure 1). Some of these shareholders may include contractors who undertake to carry out design, construction and/or facilities management work for a fee from the consortium company. Other shareholders may include investors and financiers. The consortium can also raise debt finance to pay for the construction and operation costs.

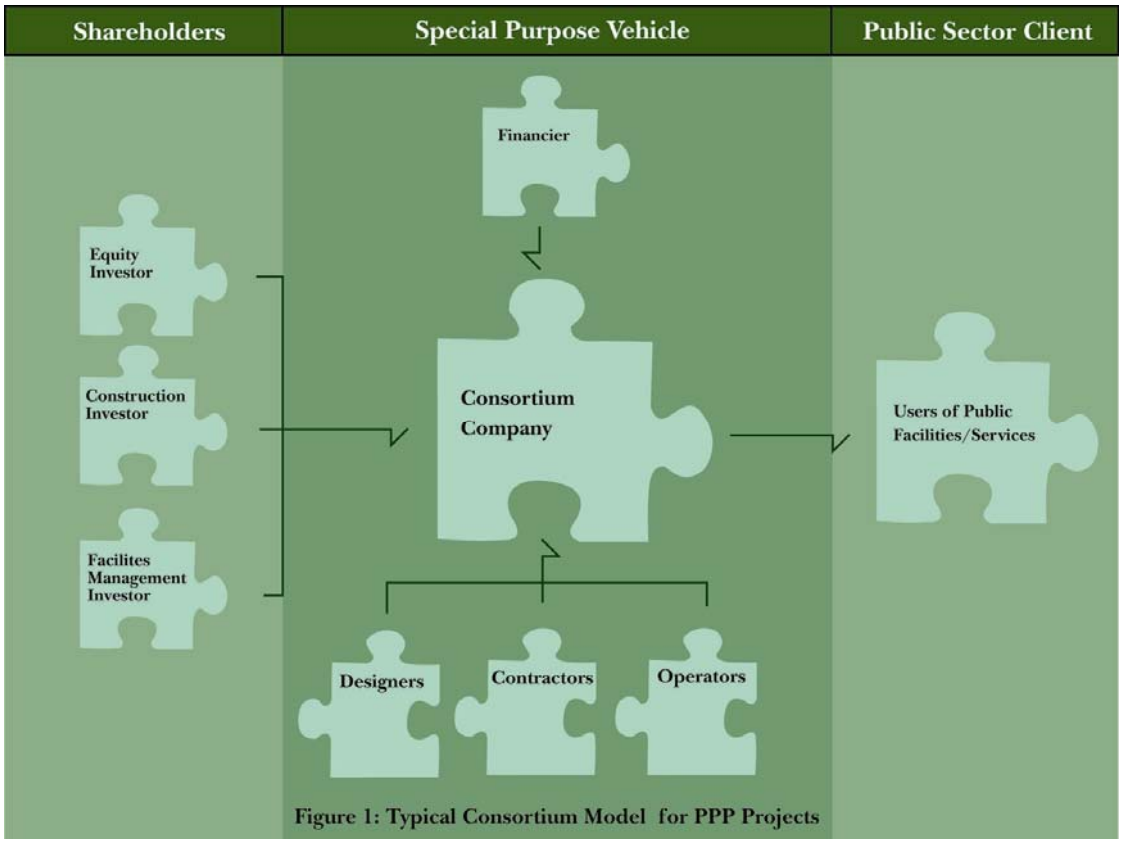



Figure 1: Typical Consortium Model for PPP Projects

## PROJECTS SUITABLE FOR PPP APPROACH

International experience on PPP projects indicates that it likely offers value for money in those major capital projects where

- there are significant ongoing maintenance requirements,
- the public sector client can clearly define its needs in terms of service outputs so as to ensure effective, equitable and accountable delivery of public services under a long-term contract, and
- the nature of the services to be procured allows them to benefit significantly from the whole life cycle costing.

Examples of projects that have successfully adopted the PPP approach in other countries include housing, hospital, school, police station, prison, transport, waste, leisure and culture projects, etc. Thus, its prospective application is vast.

**TYPICAL DEVELOPMENT STAGES OF PPP PROJECTS**

The following integrated professional services can be offered, independently or in partnership with others, for public sector clients in PPP projects:

**Project Initiation Stage**

- Assess client's needs for required facilities/services
- Conduct technical, environmental and financial feasibility studies on the project including land requirements
- Examine alternative procurement strategies including the PPP approach
- Identify, assess and evaluate potential risks associated with the project
- Assist the client in drawing up a business plan and obtaining in-principle approval of the project from relevant stakeholders

**Planning Stage**

- Establish output specifications in close collaboration with the client
- Evaluate alternative possible solutions procured either under traditional or PPP approaches
- Prepare a Public Sector Comparator to ensure value for money
- Where necessary, prepare preliminary designs and studies for use in seeking basic approvals for the project such as land and town planning issues.

**Procurement Stage**

- Request expressions of interest from possible private sector participants
- Pre-qualify those companies that have submitted an expression of interest
- Prepare the necessary documents which, depending upon the nature of services to be procured, may typically include:
    - General duties and responsibilities of the parties,
    - Output-based performance specifications,
    - Contract duration for services commencement and completion,
    - Protection against late commencement of services by such means as liquidated damages, performance bonds, company guarantees, etc.
    - Performance monitoring mechanisms,
    - Price and payment mechanisms,
    - Maintenance requirements,
    - Methods of handling changes in client's requirements,
    - Assignment and change of ownership of the consortium (contractor),
    - Treatment of assets at the end of the contract,
    - Dispute resolution mechanisms,

  - Step-in mechanisms in the event of default,
  - Due diligence over subcontractors and financing documents, and
  - Consent for refinancing proposals, etc.
- Invite pre-qualified companies to submit proposals in one single stage or in two stages
- Evaluate proposals submitted to check any non-conformities with the original documents and also compare with the Public Sector Comparator
- Negotiate, on behalf of the client, with the consortium companies (contractors) who have submitted the best conforming proposals
- Recommend the appropriate contractor to which the contract can be awarded and prepare the Project Agreement for execution.

**Development (Roll-out) Stage**

- Review the design, construction, maintenance and facilities management procedures to ensure they are generally in compliance with the output-based requirements and proposals submitted by the contractor (without releasing him from his responsibilities under the Project Agreement)
- Regularly monitor the contractor's progress to ensure it will deliver the specified facilities and services on time
- Carry out general administrative duties including implementing any changes in client's requirements
- Review testing and commissioning of the facilities upon completion
- Accept the new facilities for occupation and use, thereby triggering payments for facilities/services delivered thereafter
- Monitor the making good of defects by the contractor during the specified defects liability period

**Delivery Stage**

- Review the delivery of services to ensure that they are in conformity with the specified performance standards
- Monitor the planned and emergency maintenance works including capital replacements
- Audit the contractor's activities in accordance with an acceptable quality management system
- Recommend payments of the unitary charges for the services provided
- Manage any changes in the client's requirements including the provision of new facilities/services
- Carry out general administrative duties required under the Project Agreement including dealing with such complex issues (if encountered) as
  - Change in consortium members,
  - Consent for refinancing proposal,
  - Major default by the contractor, and
  - Dispute resolution, etc.
- Where necessary, conduct dilapidation and condition surveys of facilities prior to them being handed over to the client at the end of the contract

# CHAPTER 2

# APPRAISAL OF PPP PROJECTS

## NEED FOR FACILITY

A review should be made on the existing service delivery arrangements. The analysis should include details of the current service costs and budgets, analysis of the organizational arrangements and management responsibilities in place for the service, the contractual arrangements in place to deliver the existing services, and the standards of service currently being delivered.

It should also provide information on the condition, age profile and risks associated with the current assets. This should include a commentary on any asset management plans or condition surveys undertaken. There should also be a commentary on any local issues that require special attention or consideration. Projections of need or demand, supported with calculations should be provided and quantified.

It is common that the need of new services or assets is driven by

- The insufficiencies of existing services, such as replacement of an obsolescent asset, or
- The implementation of a new government policy which drives the demand of new assets/services; or
- Changes in external environment which demands new services and assets.

Usually, the public sector client has articulated its key priorities in terms of outcomes that meet specific community needs. Based on the public sector's key priority lists, the department client will identify the service in which they are in the best position to provide the service and also at the same time satisfy the department client's plans.

## PROJECT OBJECTIVES

When the need of such services/facilities is confirmed, the details of what services/facilities are required should be established. These are stated as project objectives and they clearly identify what kind of services or assets the project intends to deliver.

The objectives should be consistent with the statements of the public sector client's objectives. It may conduct surveys on the potential users to obtain an understanding on their needs and refer to the population forecasts to project the level of demand on the facility/services.

Objectives should initially be stated broadly enough so that a wide range of options to meet them can be identified. However, they should also be developed in more specific details that are specific, measurable, achievable, relevant and time-dependent.

## APPRAISAL OF PROJECT OPTIONS

### List of Viable Project Options

The objective of project options appraisal is to identify the option that best meets the project objectives. A wide range of project options should be identified before short-listing for detailed appraisal. Project options can be created by a number of ways. It can be generated by holding a facilitated workshop with stakeholders, conducting a market sounding exercise or discussion with other departments which have previously developed and procured similar projects. In addition, a range of options can be identified by consulting practitioners and experts on the options' suitability.

It is important to consider both the assets and non-assets solution in meeting the service need. Examples of project options include refurbishing existing facilities or leasing and buying new ones, to rent, build or purchase, transfer service provision to another body, etc. In general, project options are classified into three categories:

1. Existing asset solutions: this option considers upgrading or refurbishment of existing services to the required standard.
2. Non-asset solutions: this option considers whether service requirements can be met through demand management practices or the implementation of changes to existing service delivery modes.
3. New-asset solutions: this option considers the development of new asset to meet the service need.

The long list of options is then short-listed into a list of smaller options in which more detailed assessment is made. To achieve this, cost benefit analysis is conducted. This is achieved by evaluating the net benefits of the options identified. It is important that the Base Case - 'Do nothing' or 'Do minimum' option is included in the list and the list of options is then evaluated against a base case.

### Cost Benefit Analysis on Short-listed Project Options

The cost benefit analysis involve six steps; namely, (1) identification of the type of costs in each short-listed option, (2) identification of the financial and non-financial benefits, (3) estimation of the costs and value of benefits, (4) analysis of monetary costs and benefits, (5) analysis of non-monetary costs and benefits, and (6) assessment the balance between options.

#### 1. Identification of the Type of Costs in each Short-listed Option

Typical costs of an option

- Initial capital costs: These may include purchase of land and buildings; purchases of equipment, hardware and software; installation and

implementation costs; development costs including staff costs and consultancy fees; testing; training; special furniture; infrastructure and works service; communications; and initial security and contingency costs.

- Opportunity costs: Opportunity costs refer to the costs to the economy of using a resource in one investment is the benefit foregone by keeping it from use in the next best investment opportunity. These may include the costs of capital assets such as land, buildings, equipment and vehicles, which are already in public ownership.
- Replacement costs: The replacement costs of any of the capital assets employed on the project should be considered. 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.
- Staff costs: This includes not only salary costs, but also the costs of accommodation, superannuation, employers' national insurance contributions, allowances, other overheads as set out in the relevant employment regulations. The staff which involved in management, operation, support and ongoing training should be included in the appraisal process.
- Operation costs: These refer to the costs recurring over the whole term of the appraisal, and may include maintenance charges; licensing and support costs; leasing and rental costs; recurring contingency and security costs; energy costs; rates; and cleaning.

## 2. Identification of Financial and Non-financial Benefits

All benefits to the public and non-government sectors, e.g. the private, voluntary and community sectors, should be taken into account. This includes the direct effects of interventions and the wider effects on other areas of the economy. All quantifiable and unquantifiable benefits should be identified. Examples of financial benefits are residual value, sales proceeds from existing properties and savings in leasing and staffing costs. Examples of non-financial benefits are benefits to the consumers that are not reflected in revenue flows, benefits to the broader community and improved working conditions for staff if the option is implemented.

## 3. Estimation of Costs and Value of Benefits

Different techniques are used to estimate the costs and value of benefits, depending on the availability of market data and whether the benefits can be quantified.

(1) When the cost and benefits of an option can be quantified and market data are available

In valuing the costs and benefits of an option in which market data are available, the following principles should be employed in measuring the cost of resources:

1. The costs to both the public sector and non-government sectors should be covered;
2. Costs should be extended to cover the period of the useful lifetime of the assets encompassed by the options under consideration;

3. If the appraisal concerns the contractual purchase of outputs and outcomes, the appraisal period may be different;
4. Costs should be based on market prices;
5. Costs should be expressed in terms of relevant opportunity costs. Opportunity costs of using a resource is its value in its next alternative use. When estimating the opportunity costs of a resource, it should be based on up-to-date market valuations;
6. The full economic cost of each option, net of any expected revenues, should be calculated. Cash flows should not be reflected in the opportunity costs. They are to be included in appraisals concerning assistance to the private, voluntary and community sectors;
7. Residual value should be included and tested for sensitivity as it may be difficult to estimate the future residual value at the present time; and
8. If the market is dominated by monopoly suppliers or the market is significantly distorted by taxes or subsidies, prices will not reflect the opportunity costs and adjustments may be required. Valuing at market prices are not suitable and the economic advice of specialist will be needed

(2) When the cost and benefits of an option can be quantified but market data are not available

Where market data are not available for the costs or benefits, alternative approaches in attributing a value for inclusion should be adopted. Examples of these include the inference of a price based on customer's willingness to pay or derivation of plausible estimates for the costs and benefits based on the research findings. Details of these techniques are given in Appendix A.

The technique chosen will depend on the individual circumstances and should be judged on a case-by-case basis. In some cases, it will be appropriate to use both techniques together for checking the consistency of results.

(3) When there are difficulties in quantifying the costs and benefits

All costs and benefits must be clearly described and should be quantified where this is possible and meaningful. However, it is not always cost-effective or practical to value costs and benefits in money terms. Other methods are used to assess the impacts of non-monetary factors on options section. They will be discussed later.

## 4. Analysis of Monetary Costs and Benefits

Based on the monetary costs and benefits of each option, the net present value is determined. The net present value of an option is the primary criterion for deciding which option is to be selected. The decision rule is to select the option that maximize NPV or minimize net present cost (NPC), but subject to the impacts of the non-monetary costs and benefits.

The net present value (NPV) of an option is the difference between the discounted cash flows which are expected from the option (benefits), and the costs. When the sum discounted costs exceeds that of the discounted benefits, the net figure is be referred to as the Net Present Cost (NPC). The NPV is the key summary indicator of the comparative value of an option. It takes into account the social time preference and combines capital and recurrent cost and benefits in a single present day value, thus allowing direction comparison of outputs with very different patterns of costs and benefits over time.

To determine the NPV, it is necessary to adjust the monetary costs and benefits for optimism bias, distributional impacts and relativity price changes, followed by discounting the adjusted costs and benefits in today's value. The difference between the adjusted costs and benefits would give the NPV/NPC.

(1) Adjustments

*Optimism Bias*

There is a demonstrated, systematic tendency for project appraisers to be overly optimistic. Appraisers tend to overstate benefits and understate timescales and costs, both capital and operational. It is necessary to make adjustments on the assumptions about costs, benefits and timing for the optimism bias.

Optimism bias should be adjusted in relation to capital costs, work duration, operating costs and under delivery of benefits. In theory the principles applied to adjustment of all these aspects are the same. However in practice, quantified adjustments for optimism bias are not available for some areas because of the lack of data.

*Distributional Impacts*

Within a society, there are different socio-economic groups which vary in age, gender, ethnic group, health, skill, location and etc. The costs and benefits of each option will not be the same across these socio-economic groups. For example, the impact of a project on individual's well-being will vary according to his income. According to the diminishing marginal utility of additional consumption, an extra pound will give more benefit to a person who is deprived than to someone who is well off. These distributional impacts must be explicitly stated and quantified, if possible, when calculating the net present value of each option.

Distributional weights are often used to adjust explicitly for distributional impacts in cost benefit analysis. However, deriving the distributional weights require detailed information about the affected population. A judgment must be made as to whether the necessary socio-economic information is available at an

acceptable cost, given the importance of the proposal and the likely scale of the impact of distributional analysis.

*Adjustments for Relativity Price Change*

Relative price change should be calculated when particular prices are expected to increase at significantly higher or lower rate than general inflation. For example, in some situations, the value of a benefit or a cost of an option will rise when income increases. This takes place when the good is in fixed supply or because the units in which it is measured are such that its utility value can be expected to remain broadly constant, regardless of changes in income. The effect is prevalent if the value of benefits is estimated by the stated or revealed preference approach.

When making the adjustment, different rates should be applied to goods or services with different characteristics. This is because goods or services will be affected by inflation at a different extent according to their characteristics. For example, if the size of the market for a particular service increases, there is a greater potential for economies of scale, and relatives prices may be expected to reduce.

(2) Discounting Cash Flow Analysis

The adjusted costs and benefits represent values at different period of times. They should be discounted into present value before determining the NPV. In some countries, there is a standard schedule of discount rates available for the discounting purpose. For example, the standard discount rate employed by the UK and the Australia is 3.5% per annum. Discounting should only be applied to figures that are expressed in real terms, i.e. excluding allowance for general inflation and to figures that are adjusted for appraisal optimism. By applying the appropriate discount rates to the costs and benefits, the value of future costs and benefits in present day terms can be determined, and hence the NPV.

The difference between the adjusted and discounted costs and benefits of each option would become its NPV (or NPC if the sum discounted costs exceeds that of the discounted benefits).

(3) Assess the Impacts of Risks and Uncertainties

Risks and uncertainties may significantly change the NPV and their impact should be assessed before prioritizing the options. A risk is not the same as an uncertainty. A risk is measurable and has a known or estimate probability, where as an uncertainty is not measurable and of unknown probability.

In assessing the impact of risks and uncertainties on the net present value, techniques such as quantitative risk analysis and sensitivity analysis which

assess the effects of changes in project variables that are quantified can be used. Chapter 5 will discuss risk management in detail.

**5. Analysis of Non-monetary Costs and Benefits**

In many situations, there are non-monetary impacts such as environmental, social or health effects that cannot be valued cost-effectively. They may be crucial to the decisions needed and must be taken into account in the option assessment. The nature of option assessment can vary from:

- qualitative description
- ticking a box to indicate that an option satisfies a particular constraint
- measurement of impact in suitable non-monetary units
- the use of relative weights for each criterion and explicit scoring or ranking of each option

Impact statements or performance matrices and the weighted scoring method are examples of Multi-Criteria Analysis (MCA) which is of more sophisticated nature. MCA brings structure and transparency to judgment of how options compare regarding factors that are not expressed in money values. It should generally relate closely to the stated objectives of the project, and consists of comparative assessments, both quantitative and qualitative of how well each option meets the objectives.

Whatever which the technique is adopted, the aim is to find a suitable way to assess non-monetary factors and present them alongside the money values. It is important to make clear how the options compare in regard to the non-monetary factors, and where possible, costs and benefits should be quantified in suitable non-monetary units.

**6. Assessment of the Balance between Options**

Based on the results of the monetary and non-monetary cost and benefits analysis, it is possible to identify a preferred option by balancing the pros and cons between options. The preferred option should be presented in an appraisal report with justifications on the selection. The typical content of an appraisal report includes the following elements:

- Explain the strategic context
- Establish the need for the project
- Define the objectives and constraints
- Identify and describe options
- Identify and quantity the monetary costs and benefits of each option
- Adjust for optimism bias, distributional impacts and relativity price change
- Weigh up non-monetary costs and benefits
- Calculate net present values and assess the impacts of risks and uncertainties
- Assess the balance of advantage between the options and present the results and recommendations

**EVALUATION OF PROCUREEMNT OPTIONS**

If public private partnerships (PPPs) are to be considered, the project should contain the following characteristics.

- Scale of Project: The project should be sufficiently large in size and scale to enable the private sector to benefit from economies of scale, recover bid costs and make an acceptable return.
- Affordability: The public sector client should consider partnerships with the private sector where it does not have sufficient resources or expertise to run the project. Very often, PPPs are considered because additional funding is needed to finance the project.
- Nature of Assets and Service: The nature of the assets and services identified are capable of being costed on a whole-of-life, long term basis. An investment with a time horizon of 5 – 10 years is unlikely to benefit from the PPPs approach.
- Outputs: The outputs of the project must be capable of being defined in clear and measurable terms.
- Nature of Services: Because of accountability and other reasons, it may not be appropriate for the private sector to involve in the delivery of particular kind of services. PPPs should only be considered for projects that do not involve these kinds of services.

A project that contains the characteristics of a PPP project only suggests that there is a prima facie case for considering the PPP approach. The desirability of PPP approach should further be confirmed by conducting the following tests and assessments: (1) preliminary risk assessment, (2) value for money assessment, (3) bankability assessment, (4) public interest test and (5) market interest test and assessment on the capability of private sector.

**Preliminary Risk Assessment**

The purpose of preliminary risk assessment is to identify the potential risks in a project and to consider how they might best be allocated between the public sector client and the private sector contractor. It also supports the construction of a Public Sector Comparator which is used to determine whether the PPPs approach represents value for money. Risk management will be discussed in Chapter 5 in detail.

**Value for Money Assessment**

PPP should only be pursued where they are expected to delivery improved value for money. The assessment of value for money is a fundamental requirement of a PPPs approach. Value for money is achieved either through cost savings or additional benefits reaped through the use of PPPs approach. In the value for money assessment, the whole life cost of delivering the preferred project option by public private partnerships and conventional procurement methods will be determined by constructing the Public Sector Comparator (PSC) and Private Financing Predictor (PFP) respectively.

The PSC is the hypothetical, risk-adjusted, cost of the government itself delivering the project output. In this mode, it is assumed that the public sector client retains ownership and responsibility for construction/redevelopment and ongoing management of the project, even though a range of the required services for delivery may be outsourced. On the other hand, the PFP is a cost model assuming the private sector funds and takes responsibility for the delivery of the project. It is generally assumed in this model that the risks associated with design, construction, maintenance and some portion of operations are transferred to the private sector, though each project will transfer different types of risks. Value for money assessment will be discussed in Chapter 3 in detail.

**Bankability Assessment**

The purpose of bankability assessment is to establish the suitability of project for the use of private finance. There are three major sources of private finance: equity, mezzanine finance and debt. Each type of finance will have different characteristics in terms of the risks accepted and the rates of return, and they are provided by different fund providers.

The use of private finance is possible only if it generates a reasonable rate of return, given the risk, for the fund providers. Bankability assessment will examine the characteristics of a project and determine if it is attractive to the equity and debt providers. As the finance providers have different risk taking attitudes and have different expectations on the rate of return, they tend to look for projects with different characteristics.

Equity providers tend to look for projects with the following characteristics:
1. Bankable cashflows
2. Opportunity to innovate
3. Synergy may be important where the equity provider is also the operator of complementary facilities.
4. Opportunities for financing engineering
5. Appropriate risk transfer

Debt providers tend to look for projects with the following characteristics:
1. Contractual balance
2. Security of cash flows
3. Environmental issues
4. Repayment cushion
5. Sponsor credit
6. Legislation framework
7. Technical complexity
8. Residual interests
9. Compensation on termination

The conclusion of the bankability assessment will help to establish whether the project is attractive to the private finance providers and to identify those issues that

need to be addressed prior to commencing the procurement process, or that need to be reflected in contract document if the PPPs approach is adopted. Chapter 7 will discuss the funding for PPP projects in detail.

**Public Interest Test**

Selection of the procurement option should make due considerations on the impact on the public. The PPPs approach should only be adopted if the public sector client can ensure that the public interest can be adequately protected. The public sector client should liaise with the public interest groups and other relevant bodies to assess the impact on the public interest. The use of PPPs approach should enable:

1. Effective achievement of service requirements: The PPP should enable effective achievement of project objectives so that the public interest is properly served.
2. Accountability and transparency: The public should be well informed about the obligations of the public sector client and the private sector partner. Information regarding the obligations of the public sector client and the private sector partner should be released to the public. However, other information, such as trade secrets, and materials which if disclosed would seriously harm the public interest, should be withheld.
3. Public access: The public should be protected against discontinuous supply of services. If the private sector is involved in the procurement option, chances are that provision of services will be terminated if any breach of the contract by the private sector. It may be necessary to include any contractual provisions that protect the public interest against misconduct of the private party.
4. Security: The selected procurement option should not be susceptible to corruption, crime, and poor quality and insecurity during the provision of services.

The results of the public interest test represent the constraints faced by the private sector if they are involved in the construction, operation and delivery of the service. These in turn affect the market appetite and the likely level of competition in the market. In some cases, the project delivery options may need to modify or abandon if the implementation of particular project options result in adverse impact on the public. In other cases, relevant measures can be implemented to protect the public interest.

**Market Interest Test**

PPPs should only be considered if the private sector indicates that they are interested and have the necessary capability in undertaking the project. It is important that more than one private organization indicates their interest to ensure efficient competition takes place. One of the benefits of PPP is that the public sector client can take advantage of competition among private organizations as competition leads to innovation, efficiency and lower costs. If there are a limited number of private companies who indicate their interests and that only a few companies are equipped with the expertise or ability to undertake the preferred project option, the use of PPP is not desirable in such circumstance.

The interest and capability of the private organizations can be examined through precedent review and market sounding.

(1) Precedent review

In the precedent review, previous PPP projects both undertaken in local and international markets will be reviewed. This can help to establish the potential interest of private organizations in particular types of projects or the level of risk they are willing to take.

As each project is unique, and the timing of project which will be launched in the market will not be the same as the previous PPP projects, it is important to hold discussion with the private sectors in order to understand their interest and their capability, especially if the project is large, innovative and complex infrastructure projects.

The precedent review also helps to identify the key issues so that focus can be made on these issues when discussing with the private sector in the market sounding exercise.

(2) Market sounding

Market sounding refers to the practice of soliciting opinions from private sector as to the potential viability and attractiveness of particular projects. Issues to be explored during the market sounding exercise may include:

- The strength of the private sector market for the project
- The private sector's scope for achieving economies of scale
- The private sectors' expertise
- The likely level of market interest in the project
- The capability of the market to undertake the project

Discussions should be made with private companies such as construction companies, service providers and financiers. Alternatively, the public sector client can invite potential private sector to express their interest in participating in the market sounding exercise.

Issues that are going to affect the market appetite and the likely level of competition in the market should also be discussed. For example, risk allocation, management and mitigation, project structure, the public interest that should be protected in the delivery of the service, government legislation and other policies that are going to affect the construction, operation and delivery of the service should also be covered.

The discussions should be held together with advisors and the relevant department as it may involve technical issues and specialist advices are needed. The public sector client should be careful in not giving one party any advantage over the other in the subsequent formal tendering process. It is also important to

make itself clear to the party that such discussion does not represent any of the formal procurement process, and no commitment regarding the award of the contract was made.

**Conclusions on Suitability and Form of PPP**

The results of the assessments and tests would give indications on the suitability of the use of PPPs approach, and if yes, the form of PPPs to be adopted. The use of PPPs approach is said to be desirable if:

- At the project level: The private sectors' higher financing costs can be covered by the value of risks transferred to the private sector, as well as efficiencies and innovative practices introduced by the private sector. The project should be attractive to the fund providers and that sufficient risk transfer is possible to merit a PPP approach.
- The public sector: The public sector is equipped with, or is able to acquire, the procurement skills, delivery skills and other capabilities in delivering of a PPP project.
- The private sector: The private organizations show an interest on the project and they are capable of delivering the project.
- The public interest properly addressed and protected

Since the actual cost data are not available at this stage, this makes the results obtained by the monetary comparison of public and private procurement options, i.e. the PSC and the PFP, less important at this stage.

**Compilation of Outline Business Case**

The purpose of the outline business case is to seek approval from the government for the preferred project and procurement options and to obtain funding if the project is not financially free standing. It contains justifications for the preferred project and procurement options. It also provides information regarding the expected value for money of the preferred project and procurement options. A typical outline business case consists of the following sections:

(1) Executive Summary

The executive summary should provide a summary of the development process of the outline business case, and the key conclusions arising. It should be strategically focused and succinct, and should effectively convey the key messages arising from the appraisal process such that decision makers gain a good appreciation of the need for change, the appropriateness of the recommended option, and the implications of the decision to proceed. The following should be included in the executive summary of the outline business case:

- A summary of the key conclusions and recommendations arising form developing the appraisal process, and an analysis of the next steps required for taking forward the project;

- A statement of the support and commitment of the public sector client (and other key stakeholders);
- An analysis of the strategic context in which the service is provided, the business need for the service (including details of the contribution that the service should make to the department's corporate strategy) and the synergies that exist between the service and the public sector client's corporate objectives;
- An overview of the existing services provided, including analysis of existing service strengths and weaknesses, key service standards, outputs, the condition of the current assets or infrastructure, and trends in public opinion about the service;
- A summary of the public sector client's objectives for the service, as used in conducting the appraisal of project and procurement options (and subsequently to be used throughout the procurement process);
- A brief description of the options appraisal process that was followed in order to identify the preferred project and procurement option (including a summary of the financial and non-financial outcomes).
- An assessment of the economic benefits, value for money, affordability and bankability of the preferred service delivery option. This should include confirmation that the private organizations expressed their in the preferred service delivery option.
- An overview of the public sector client's approach to developing and delivering the project, including consideration of contractual terms, the balance sheet treatment and project management arrangements.

(2) Strategic Context and Business Need

In this section, the OBC should include a review of the public sector client's vision and objectives for the service, the key strategies and objectives of the public sector client. It should also provide the conditions of the existing services and projections of need or demand and highlight the insufficiencies of existing services, if any.

It is also be useful to summarize any evidence of public perceptions of the existing service. For example,

- How the public perceptions have developed over time;
- How they reflect demand for better quality or more efficient services, any public and community opinion surveys on trends in relation to the performance of the service;
- The results of any consultation process in relation to the service;
- Analysis of the numbers and frequency of requests for service and/or complaints;
- Analysis of the requests for improvements to the service; and
- The results of other surveys/initiatives where improvements to the service have been cited as a means of improving the efficiencies of other department's activities.

The OBC should demonstrate that there is a business need for the proposed project by showing that

- the current service fails to maximize its contribution to the public sector client's strategies;
- the services delivered by the project can contribute to the broader strategies of the public sector client;
- the project forms a logical and coherent part of the public sector client's strategies and plans; and
- there is a fit of the project within the wider strategic and policy context.

(3) Service or Project Objectives

The OBC should list the objectives of the proposed project. The provides the basis against which the government can assess on the suitability of the proposed project option recommended by the public sector department and to propose alternative options based on the objectives of the proposed project, if necessary.

(4) Preferred Project Option and Procurement Option

The OBC should give recommendations on the preferred project option and procurement option.

*The Preferred Project Option*

The list of options that have been considered in the options appraisal stage should be described. The benefits, costs and consequences of each option and those options which are being progressed for further analysis should be included in the OBC. In general details of two or three options are included in the OBC. The two options which are most likely to deliver the desired outcomes and the 'do nothing' or 'do minimum' option are included.

The impact on related services and assets and opportunities for integration with other government services demonstrating consideration of joined-up government can also be included.

*The Procurement Options*

The OBC should identify the procurement options that have been considered in the delivery of the preferred project option, give recommendations on the procurement option that create the best value for money to the department with justifications. It should also describe the evaluation framework upon which different procurement options are to be evaluated. These should include

- Comparison between the cost of delivering the preferred project option through traditional procurement method, the PSC, compared to that delivered through private delivery option, the PFP;
- To demonstrate that the private parties have the capability to delivery the required services, within any constraints set by the public sector client,

the service delivery would be sufficiently reliable, and that such delivery would provide value for money;

- To justify that the risks and rewards inherent in providing the required outputs represent a genuine commercial opportunity;
- To confirm that the finance market at the time will support the proposal; and
- To illustrate that there are opportunities for cost effective risk transfer.

(5) Project Delivery Arrangements

This section of the OBC should document the public sector client's intended approach to the procurement of the project and set out the key issues that are to be addressed in the subsequent development, procurement and delivery of the project. The key elements to be included are:

- Output Specification: The OBC should include a summary of the key elements of the draft output specification and commentary on how the output specification will be developed further.
- Proposed Performance Measurement and Payment Mechanism*:* The OBC should identify the key performance indicators which will measure performance and the key components of the payment mechanism. Discussions should cover the relationship between payments from the public sector client and the related necessary level of performance.
- Indexation, Benchmarking and Market Testing: The OBC should set out the public sector client's initial views on indexation, benchmarking and market testing, which will be included as part of the payment mechanism and contract for the services.
- Contractual Terms*:* The OBC should set out how the public sector client will develop the contract for the project. It should indicate how the public sector client expects to deal with the key contractual issues associated with the particular type of project.
- Risk: The OBC should identify all material risks associated with the project, specifying the external and project development risks for the public sector client, the project risks to be allocated to a private party, and those to be retained by the public sector client. It should also include any project transition risk, such as interest rate or planning risks that may be carried by the public sector client until allocated to the private party when contracts are operating. This is a key area of the business case, as optimal risk allocation is fundamental driver of value for money. For risks that are proposed to be retained by the public sector client, the business case needs to explain why the public sector client is considered better able to manage or mitigate these risks. The business case should include at least a preliminary view on the cost to the public sector client of the risks which are to be built into the PSC.
- Implementation and Project Management Plan: The outline business case should document the public sector client's approach to the development of the project management arrangements if the project secures approval to

go into procurement, and describe the arrangements that are in place, or to be put in place, to ensure an efficient procurement. It should identify the members of the project team, the delegations and reporting arrangements that have been agreed for the procurement stage, and the arrangements for involving stakeholders in the procurement process. The OBC should also set out the approval process required for the OBC, details of the commitment of members to funding the project, and evidence of the support of key stakeholders.

- Project Timetable and Resourcing: An indicative project timetable should show each of the key stages such as procurement stage, construction stage, delivery of service in the whole process and the estimated time for service delivery to begin. Regarding the procurement timetable, indicative periods for each sub-stage, such as invitation to expression of interests, in the procurement process should be given. The procurement timetable will need to be updated as the procurement proceeds, and should serve as both project management tool, and as a means of communication. Discussion should also deal with the resources required to deliver the project, how they will be secured, internally or externally, and the expected costs of the procurement team.

**SETTING UP THE INTELLIGENT CLIENT TEAM**

The role of the ICT would be to oversee the progress of the project from start to finish. The ICT should contain the necessary experience and expertise appropriate to its needs.

In addition to the client departments' own staff, it might include architects, engineers with various specializations, lawyers and financial advisors. It may also contain individuals from both within and outside the public sector client; and its composition may change according to need at different stages of the project.

The advantage of having external advisors is that they can often offer a wide range of skills and commercial perspectives and experience which are lacking in the public sector. Skills such as writing output specifications, negotiating complex infrastructure contracts that underpin PPP transactions; and understanding the financial products that investment bankers promote to underwrite such transactions are often provided by external advisors.

## APPENDIX A: TECHNIQUES FOR ESTIMATING THE COST AND BENEFITS OF AN OPTION WHEN MARKET DATA ARE NOT AVAILABLE

### Estimate the Consumers' Willingness to Pay

If 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. Estimates of the value can be obtained by the estimating consumers' willingness to pay or their willingness to accept.

Willingness to pay for a little more of a service is a reflection of the value placed by consumers on an increment of that service. This principle will hold most closely when the changes in output and price levels associated with the investment are relatively small.

Specially constructed questionnaires and interviews are designed to elicit estimates of the consumers' willingness to pay or willingness to accept for a particular outcome. Direct questions such as 'What is the maximum amount you would be prepared to pay every year to receive good x? or questions in other format such as 'Which of the amounts listed below best describes your maximum willingness to pay every year to receive good x?' are constructed. Alternatively, values can be elicited by presenting respondents with a series of alternatives and then asking them which one is their most preferred ones.

If 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, the price can simply be inferred from observing consumer behaviour. For example,

- The use of data on expenditure by consumers in seeking to participate in benefits (e.g. cost incurred in visiting a museum);
- Price data from related goods and services (e.g. variations in house prices due to the impact);
- Choice experiments e.g. experimental choice between a variety of existing and new amusement/recreation amenities to infer a value for a new amenity;
- Travel cost models for estimating recreational values; and
- Random utility models to value individual features of a site.

### Estimates Derived from Research Findings

In the absence of an existing robust monetary valuation of an impact, estimates can be derived from the results obtained by commissioning a research or the results provided by previously conducted research. Key considerations that may govern a decision to commission research are:

- Whether research is likely to yield a robust valuation
- Range of application of the results of a study to future appraisals
- The accuracy of the valuation is to the decision at hand
- Scale of impact of the decision at hand

In some countries, the methods of valuing non-market costs and benefits are well established. For example, the Department for Transports in the UK has developed its approach in valuing time in the appraisal of road schemes and other projects. Other aspects such health benefits, prevented fatality/prevented injury, design quality, environmental impacts, the valuation methods of which have been well developed in the UK. References can be made to the methodology employed in these areas when estimating the costs and benefits of an option.

# CHAPTER 3

# VALUE FOR MONEY ASSESSMENT

## DEFINITION OF THE PUBLIC SECTOR COMPARATOR (PSC)

The Public Sector Comparator (PSC) may be defined as a hypothetical risk-adjusted cost if a project were to be financed, owned and implemented by government. It is expected in net present value terms, basing on the recent actual public sector method of providing that required output specification and taking full account of the risks which would be encountered by that style of procurement (UK Treasure Taskforce, Technical Note No. 5).

The public sector comparator serves a number of purposes at various stages of the project. At the early stage, it helps the public sector client to determine if the project is affordable as it examines the life cycle cost of the project before its implementation. At the procurement stage, it provides a benchmark against which to assess tenders from the private sector and to ensure that the chosen delivery method, whether it is based on the public sector delivery approach or PPP approach, delivers value for money. During the project implementation stage, it serves as a management tool to facilitate communication between partners on key aspects such as output specifications and risk allocation (Canadian Best Practices Guide: Public Sector Comparator, 2003).

### Basic Components of a PSC

Based on the Partnerships Victoria Guidance Material: Public Sector Comparator (2001), a public sector comparator consists of four major components; namely, (1) raw PSC (or base cost), (2) competitive neutrality, (3) transferable risk and (4) retained risk, which are briefly described as follows:

- Raw PSC: The raw PSC provides a base cost under the traditional procurement method where the underlying asset is owned by the public sector client. This includes all capital and operating costs associated with the design, construction, maintenance and delivering the service over the same period as the PPP proposal and to a defined performance standard under the output specification. The raw PSC does not include any valuation of risks.
- Competitive Neutrality: Competitive neutrality adjustments remove any material competitive advantages or disadvantages that may accrue to the public sector client by virtue of its public ownerships so as to allow a fair and equitable assessment between a PSC and tenderers.
- Transferable Risk: The value of transferable risk to the public sector client needs to be included in a PSC to allow for a like-with-like value for money assessment with private sector tenders.

- Retained Risk: Any risk not transferred to a PPP tenderer is to be retained by the public sector client. This cost should be included in a PSC to provide a comprehensive measure of the full cost to the public sector client.

The public sector comparator represents a hypothetical rather than actual dollar cost to the public sector client and can simply be defined as follows:

PSC = Raw PSC + Competitive Neutrality + Transferable Risk + Retained Risk

**Reference Project for Constructing a PSC**

The public sector comparator is calculated on the basis of the net present value (NPV) of the expected life cycle cost to the public sector client of a "reference project". The reference project is the most likely and efficient form of procurement approach to satisfy all elements of the output specification if the project were to proceed on a traditionally funded basis. It also provides the same level and quality of service as expected to be provided by tenderers to enable a like-with-like comparison.

Where there is no track record of public sector procurement or where the project is particularly complex, the scope and nature of the reference project may not be clear. In such cases, additional time and resources should be devoted to defining the reference project adequately so that the basis of the PSC can be clearly established.

**Discounting Cash Flow**

Since a PPP project typically lasts for a long period of time, the final PSC figure is sensitive to the inflation over time. Discounted cash flow analysis is thus the central component of the PSC calculation. Discounting is to produce the net present value (NPV) of a stream of future casflows, allowing comparison between a PSC and the competitive tenders on a single cost basis.

The discount rate used to convert future costs into present costs should reflect the public sector client's time value of money plus a possible premium for the systematic risk inherent in the project. The systematic risk premium is the measure of the extent to which a project's returns are likely to vary more than a portfolio of projects.

The discount rate can be expressed in nominal (market) terms, reflecting both the effects of general price inflation and real earning power of money invested over time. Nominal discount rate is given by following formula:

Nominal discount rate = (1 + real discount rate) x (1 + inflation rate) - 1

The discount rate includes an implied cost of finance (capital), but excludes the project risks. The value of project risks is valued as a cash flow item in the risk component.

**RAW PSC**

The raw cost represents base cost to the public sector client of owning the project and delivering the service. It covers the capital cost, design cost, maintenance cost and cost of service delivering over the period of the project. It is based on a cash flow forecast. Timing of cash flow is important in the construction of the raw cost, especially maintenance cost.

All costs over the life of the project are included in the raw cost. Only financial costs and benefits are included in the PSC. Non-cash costs and benefits are excluded from the PSC because the PSC is intended as a quantitative financial benchmark against which to assess tenders. Risks and contingencies are also excluded from the raw PSC, but included in the 'risk component' of the PSC. Raw cost is given by

Raw cost = (capital costs – capital receipts)
+ (operating costs – third party revenue)

**Capital Cost**

Both direct and indirect capital costs are taken into account. Direct capital costs are costs that can be specifically associated with the production of any services, i.e. those needed to construct and/or upgrade the facility. Indirect capital costs are those which are not directly related to the provision of services or those assumed by the public sector.

In calculating the capital cost, it is preferable to include the direct and indirect capital as a separate cash flow item. This allows for additional analysis of each sub-item. Directly cost typically includes:

- Design of the project
- Land and development costs
- Raw materials
- Payments to external providers (i.e contract price)
- Costs of the public procurement process (including project development, documentation and contract management)
- Payments to external consultants and services regarding project construction (financial, legal, engineering, patronage and others)
- Plant and equipment (e.g. machinery and IT platforms)
- Demolition
- Inspection
- Modification/improvement/upgrades throughout the life of the project
- Permits

Indirect capital costs typically include:

- Partial commitment of plant and equipment
- Partial usage of new administration buildings.

**Maintenance Costs**

Maintenance costs are generally recurrent and are associated with maintaining the capital and quality of the existing asset rather than upgrading, improving or expanding the asset. These typically include raw materials, tools and equipment and labour required for maintenance (wages and salaries).

When determining the maintenance costs, one should take into consideration the timing of cash flows and factors such as upfront capital costs, the periodic maintenance requirements, improvements and upgrades to existing facilities and economic life of the project.

When determining capital and maintenance costs, factors such as upfront capital costs, periodic maintenance requirements, capital improvements and upgrade to existing facilities and capital expenditure on additional facilities should be considered.

*Adjustment for Capital Receipts regarding Direct Capital Costs*

In some cases, the public sector client may expect to receive capital receipts as a result of upfront sale, lease or disposal of assets not involved in the provision of services. In addition, where the underlying asset has a useful life long than the term of the project, the public sector may have the option to sell or dispose of its remaining interest in the underlying assets. The capital receipts as a result of all these activities are deducted from the raw cost, based on their expected timing.

When determining the residual value, it should consider the nature of the asset, term of the preferred project option, historical residual value allocations, expected market for the assets and the likely economic benefit to the public sector client if the underlying asset is retained and used.

**Operating Costs**

Both direct and indirect operation costs should be taken into account. Direct operating costs are associated with the operation and maintenance of the facilities based on a set of performance standards and service levels. Direct operating costs typically include:

- Costs incurred as a result of direct employment of the employees in the service provision, such as wages and salaries and benefits
- Direct management costs
- Insurance
- Emergency and unplanned repairs
- Security
- Repairs and maintenance
- Support contracts, such as cleaning, landscaping, etc.
- Tools and equipment
- Materials and consumables.

Indirect operating costs are costs that are not directly related to the provision of services. These typically include corporate overheads, such as ancillary costs and non-core IT and equipment, and administration overheads, such as facilities management and overall project management.

*Adjustments for Third-Party Revenue regarding Operating Costs*

During the operating period of the project, third-party revenue may be generated when third-party demand exists for the project or related services. When service capacity exists above the public sector client requirements, third party revenue will also be generated. This third-party revenue which would reduce the net cost to the public sector client should be deducted from the total operating costs in the raw cost.

**Other Indirect Costs**

There are some hidden costs which should be included in the raw costs. These cover items such as the provision of services by another level of government that otherwise would not be available from a private sector at the same cost, such as normalization of grants-in-lieu of taxes as a proxy for property taxes. Insurance costs for assets and services that are typically not insured by a public sector as it was deemed from a risk management perspective to self insure the facilities are considered as hidden costs.

The intent of these hidden costs is to normalize the costs between the way a public sector client might deliver the project and related services and the way a private sector provider might establish its comprehensive costs for the project.

*Techniques for Estimating Indirect Costs*

Indirect costs can be allocated using the traditional indirect cost allocation method and activity-based costing method.

Traditional indirect cost allocation method involves considering the extent to which the indirect cost contributes to, or was caused by the services. Whatever is identified as driving the cost is then used as the basis for allocating indirect costs to the services. For example, a cost driver for allocating accommodation rental costs would be the ratio of floor space occupied by each person or work group to the total floor space.

Activity-based costing method examines the activities undertaken within an organization, determines why they are used in the production process, and then assigns costs to services according to the consumption of each activity in the production of the services. Each activity is costed on the basis of the resources consumed.

**COMPETITIVE NEUTRALITY**

There will be financial advantages and disadvantages enjoyed by the public sector client as a result of the public ownership. The kind of financial advantages and disadvantages enjoyed by the public sector are not the same in each country. It depends on the specific laws and regulations. For example, some public sector clients may enjoy land tax exemption, rates exemption and stamp duties exemption as a result of public ownership.

Competitive neutrality adjustments are necessary to provide a fair playing field between the public and the private sector. After making the competitive neutrality adjustments, any financial advantage that can be enjoyed by the public sector will be excluded.

In making competitive neutrality adjustments, the raw cost is adjusted to reflect the net financial advantage enjoyed by the public sector. If the competitive neutrality inclusions are not made, the PSC may be artificially lower than the private bids and fail to reflect the true cost to the public sector client as a whole.

**RISKS**

The risk component is further subdivided into two components: transferable and retained risks. Transferable risk refers to all material and quantifiable risks that the public sector client would bear under a public procurement but is likely to transfer to the private sector if the project is delivered by the PPP approach. Retained risk refers to the material risks that are likely to be retained by the public sector client.

Not all risks identified are included in the PSC. Some of these risks are unlikely to have any real economic effect on the project being considered. For the purpose of constructing the PSC, only material risks (i.e. risks that are large enough to threaten the success of a project) are to be valued and included in a PSC.

In valuing the risks, it is preferably to include the costs of project risks as a separate cash flow item rather than adjusting the discount rate to include the level of risk in a project. The advantage of this method is that by valuing risk as a separate cash flow item is that it enables an understanding of how risk can be transferred and what its financial effects are. The public sector thus is better able to focus on the key factors influencing the optimal level of risk allocation. In addition, valuing each risk as a separate cash-flow item accounts for the time implication of that risks. It is important because some risks may only have an impact at the beginning of a project, and the impact of other risks may diminish or escalate over the life of the project. Chapter 5 will discuss the risk management in detail.

## CRITICAL ISSUES ON THE CONSTRUCTION OF THE PSC

### Impact of Discount Rate on the PSC cost

The discount rate chosen has a profound impact on net present value. A small change in the discount rate can make the net present value differ to a great extent, which eventually affect the viability of the PPP approach. Gaffney et al. (1999) commented that the viability of a PPP scheme is very sensitive to the discount rate that is used.

The selection of an appropriate discount rate has received much debate for the past few years. It was being criticized that the public sector client tends to favour the use of PPP approach by choosing a too high discount rate (Gaffney et al., 1999; Pollock and Rowland, 2002; Pollock and Vickers, 2000).

*The Impact of Discount Rate on Viability of PPP Scheme*

The fundamental principle of discounting is that money spent in the future is being reduced by the discount rate to its present value. Thus the higher the discount rate applied, the lower the present value of the future expenditure would become.

Varying the discount rate has a significant impact on the net present value of cash flow. An example was extracted from the PPP manual published by the National Treasury of the South African Government, which illustrates the effect of different discount rates on the net present value of a cash flow throughout a period of 15 years.

Table 3.1 shows the impact of varying discount on the aggregate value of the cash flow. It can be observed that the cumulative value of the cash flows decreases as the discount rate increases. The net present value of a cash flow with a 20 per cent discount rate is about 50 per cent of the value of the same cash flow using a five per cent discount rate over 15 years. This is due to the reduced significance of the cash flows as times goes by.

Table 3.1: The Impact of Discount Rate on Cash Flow

| Year | Cash Flow | Discount Rate | | | | |
|---|---|---|---|---|---|---|
| | | 0% | 5% | 10% | 15% | 20% |
| 0 | 100 | 100 | 100 | 100 | 100 | 100 |
| 1 | 100 | 100 | 95 | 91 | 87 | 83 |
| 2 | 100 | 100 | 91 | 83 | 76 | 69 |
| 3 | 100 | 100 | 86 | 75 | 66 | 58 |
| 4 | 100 | 100 | 82 | 68 | 57 | 48 |
| 5 | 100 | 100 | 78 | 62 | 50 | 40 |
| 6 | 100 | 100 | 75 | 56 | 43 | 33 |
| 7 | 100 | 100 | 71 | 51 | 38 | 28 |
| 8 | 100 | 100 | 68 | 47 | 33 | 23 |
| 9 | 100 | 100 | 64 | 42 | 28 | 19 |
| 10 | 100 | 100 | 61 | 39 | 25 | 16 |
| 11 | 100 | 100 | 58 | 35 | 21 | 13 |
| 12 | 100 | 100 | 56 | 32 | 19 | 11 |
| 13 | 100 | 100 | 53 | 29 | 16 | 9 |
| 14 | 100 | 100 | 51 | 26 | 14 | 8 |
| Total | 1500 | 1500 | 1090 | 837 | 673 | 561 |

Source: National Treasury, South Africa (2004)

Very often the difference between the NPV of the PSC and the private financing cost model is not significant. With a higher discount rate applied, the higher the chance the private financing method proves to be a lower cost solution.

Table 3.2 extracted from Clarke and Healy (2003) shows the varying effect of the discount rate on the results of an economic appraisal for a PFI project. It can be observed that at 6 per cent, the PFI scheme is slightly cheaper than its public sector equivalent and is thus held to be better value for money.

When the discount rate is reduced by only 0.5 per cent, the outcome of the appraisal is reversed and the public sector procurement is more attractive. This continues to increase as the discount rate is reduced. Therefore, care has to be taken in choosing an appropriate discount rate.

Table 3.2: The Impact of Discount Rate on Public Sector Option and PFI Option

| Discount Rate (%) | Public Sector Option (‘000 pounds) | Private Financing Initiative (PFI) (‘000 pounds) | Economic Advantage of PFI (‘000 pounds) |
|---|---|---|---|
| 6.0 | 174,337 | 172,663 | 1,704 |
| 5.5 | 185,803 | 186,692 | (800) |
| 5.0 | 198,884 | 202,043 | (3,159) |

Source: Clarke and Healy (2003)

**Criticisms on the Process of Risk Valuations**

The difference between the cost of implementation through public delivery approach and PPP approach is mainly attributed to the value of risk transferred to the private sector and the difference between the cost of public and private finance.

While raw cost is a potential source of difference, its impact is not as significant as the risk and cost of finance. Under public delivery approach, the construction work is also undertaken by the private sector. The difference only lies in who owns and manages the construction and operation work.

A survey conducted by Arthur Anderson and Enterprise (2000) on 'Value for Money Drivers in the Private Finance Initiative' concluded that risk is an important value for money driver. Such survey examined value for money aspects of PFI projects which are operating, i.e. the operator has started to deliver the services and the public sector has started paying for the services.

The survey concluded that risk transfer accounted for 60 per cent of the total cost saving for the PFI project. On the other hand, they found that 'the gap between the cost of public sector capital and public borrowing has been narrowing as PFI matures and the public sectors gain in experience…(p2).' They concluded that the additional financial cost is unlikely to lower the value for money potential of a PPP approach.

Other reports also found that risk transfer mostly accounts for the differences between the cost of PFI and cost of procuring under traditional method. The Audit commission (2003) found that only one of the eleven schools examined show value for money without risk transfer. In some of these projects, risk transfer represents 15% of the total project value. Similarly, the Account Commission (2002), in the analysis of six Scottish Schools, found that risk transfer is the major value for money driver in all these schools.

Table 3.3 shows the impact of risk transfer on the viability of the PPP approach on five cases. It can be observed that the PSC net present cost is lower than the PFI net present cost in four out of the five cases. With the trust 'Wellhouse', the PSC net present cost is only 0.3% higher than the PFI net present cost. However, after risk adjustment, the PSC net present cost of all five trusts became higher than that of the PFI net present cost. This illustrates the decisive effect of risk transfer on the outcome of the value for money assessment.

Table 3.3 – Risk added to public sector comparator: net present costs over 60 years
(Figures in million pounds)

| Trust | PFI Net Present Cost | PSC Net Present Cost | | |
|---|---|---|---|---|
| | | Before Risk Adjustment | Risk Added | After Risk Adjustment |
| Calderdale | 1221 | 1191 | 73 | 1264 |
| Carlisle | 173 | 152 | 22 | 174 |
| Dartfold | 928 | 881 | 55 | 937 |
| Durham | 177 | 153 | 24 | 177 |
| Wellhouse | 1206 | 1210 | 20 | 1230 |

Source: Gaffney et al. (1999)

Despite the importance of risk transfer on the viability of the PPP approach, there has been criticism on the process of costing of risk. Some criticized that the process of risk valuation is basically subjective (Institute of Fiscal Studies, 2002; Moore, 2006. Others argue that the risk transfer valuations are contentious. The value is simply done through adding a lump sum representing the cost of risk to the net present cost of the public sector comparator without detailed breakdown (Gaffney et al., 1999; Pollock and Vickers, 2000).

In many cases, the client sector client did not explain how the value of risks has been determined (Pollock and Rowland, 2002). Heald (2003) even argue that the value of risk is set at whatever is necessary to establish value for money.

# CHAPTER 4

# PROCUREMENT PROCEDURES

The procurement procedures in a PPP project typically consist of the following major steps:

1. Invite expression of interests
2. Prequalification of tenderers that have submitted an expression of interest
3. Request for proposal
4. Evaluation of tender
5. Detailed negotiation with preferred tenderers
6. Final value for money assessment on the preferred tender
7. Submission of final business case

## INVITE EXPRESSION OF INTERESTS

Invitation to expression of interests enables the public sector to tap the experience and expertise of interested parties before finalizing the scope of core and non-score services. The responses to expression of interest from the interested parties can help the public sector client to shortlist those qualified parties in which they will be invited to provide a final submission.

### Develop Expression of Interest Document

The purpose of express of interest (Eol) document is to

- formally advise the market of the project and the services that the public sector client seeks to have delivered;
- communicate to the market the proposed timeframes, evaluation criteria and hurdles to be met for the project to move forward;
- confirm the level of market interest in the project and provide an avenue through which potential tenderders can comment on the proposed project structure; and
- gain responses from the market which allow the public sector client to form a view of those parties best capable of delivering against the project objectives over the term of the proposed contract.

The Eol should contain sufficient information to allow potential tenderers to form a view on whether they have the necessary capabilities, the parties they may need to join with to develop a viable tender, and the likely project risks. Information to be included in a Eol document are listed as follows.

- A brief description of the public sector client’s background, function and purpose;

- An overview of the project, its objectives and how fits into the strategic plan of the public sector client;
- The proposed risk allocation of the project;
- Details of the services that the private sector client is being invited to delivery;
- The proposed timeframes of the project, including dates for all key milestones;
- Specific constraints that are relevant, including the level of funding available from the public sector client where a cap exists;
- The commercial principles that are to apply, including the proposed payment mechanism (to the extent it has been developed), and the manner in which site issues are to be dealt with;
- The identify and, where appropriate, the source of power of the public sector client to enter the contract;
- Details of the basis for evaluation of the responses to the Eol. The areas of evaluation typically include:
    - The track record of the tenderer in delivering services of the nature required by the public sector client;
    - The balance of skills and expertise in a consortium and the capacity of members to work together;
    - The ability of the tenderer to meet the financial requirements of the project; and
    - Satisfactory probity review of all members of the consortium
- General Eol terms and conditions including:
    - A statement that the public sector client retains the right not to proceed with the project;
    - a statement that no costs associated with preparing a response to the Eol will be reimbursed by the public sector client under any circumstances;
    - details of the manner in which intellectual property contained in the Eol responses will be treated. Typically this provides assurance that information provided by a tenderer will not be released. However, the public sector client retains the right to accommodate comments made in the Eol stage in revisions to the proposed project brief;
    - The format, date and place of receipt of Expression of Interest submissions;

- The specific information that tenderers must provide in their response. This will typically include:
    - Details of the tenderer, including details of each participation organization if the tenderer is a consortium, the formal nature of their agreement to tender as a consortium and indicative terms of arrangements of any special purpose vehicle;
    - An overview of the tenderer’s proposed approach to the project;
    - Information on the tenderer’s expertise and capability and why it considers it can satisfy the requirements of the project;
    - Details of the financial position of each member of the tenderer consortium and proposed parent backing, if relevant;
    - Information regarding conflict of interest and confidentiality requirements;

- Confirmation that neither the tenderer nor any member of the consortium has any actual or potential conflicts of interest; and
- Evidence of the tenderer's capacity to manage the indicative of allocated risks.

**Obtain Approval to Invite Expressions of Interest**

The public sector client should discuss with the government before issuing invitation to Eol. Areas that need to be discussed will include:

- Any changes to the proposed service outputs, commercial principles, cost to the public sector client or any other material aspect of the project differing from those in the business case, or in later approved variations;
- The proposed project structure and the respective roles of the public sector client and the private party;
- Information on market interest and apparent capacity for the proposed PPP project to provide a value for money solution; and
- The project timetable.

**Call for Expression of Interest**

Once approval to issue invitation to Eol is obtained, the Eol is published in public notices such as newspapers, government gazette and internet. It may also be brought to the attention of any parties who are particular qualified for the task. The timeframes for responses vary depending on the scale and nature of the project.

**PREQUALIFICATION OF TENDERERS**

The Eol documents request in some detail the approach the pre-qualified tenderers propose to take to the project, their willingness or appetite for taking on the risks associated with the project, and how they propose to structure and organize delivery of the project.

The tenderers will be assessed based on the evaluation criteria set out in the Eol document. In general, assessment will be made on their technical capability and ability to delivery the project, their solvency and financial strength and their fund-raising capability. In addition, the tenderers' capability to deliver consistently against the objectives of the public sector client, its ability to meet the requirements of the contract over the full terms and to work with the public sector client in a long-term relationship will also be assessed.

Any of the tenderers that would clearly fail on any key criteria will be removed. Those who satisfy the evaluation criteria as set out in the Eol document will be shortlisted and invited to proceed to the next stages of the procurement process where they will provide a final submission.

**Key Criteria in Evaluating Expression of Interests**

The objective of evaluation of Expressions of Interest is to determine whether the private parties have the financial capacity, technical capability, demonstrated understanding of the public sector client requirements and resources to delivery the project. The key evaluation criteria to be applied to Expressions of Interest should follow the criteria stated in the Eol Document. They include:

- Track record: This refers to the tenderer's experience and track record in delivering projects of a similar nature (recognizing that a number of parties are likely to be involved in each consortium bidding for the project). This assessment criterion needs to take into account not only the tenderer's ability to deliver against the physical aspects of the project, but its ability and track record in delivering outputs under long-term contractual arrangements.

- Financial position and financing: This refers to the ability of the private party to secure the finance for funding the project. This requires an examination of the financial position of the members of the consortium and consideration of financiers' perception of the organizations and the risks associated with the operations generally.

  Consideration of the financial position should also take into account the ability of the tenderer to support the contractual arrangements over the term. Financing the initial development of the project is clearly critical, but it is just as important that the private party's financial outlook is sufficiently robust to give the public sector client comfort that the service delivery requirements and the public sector client's rights under guarantees can be supported over time.

  The evaluation process should also have regard to the indicative financing structure reflected in the Expression of Interest, which should be reviewed to assess its deliverability and the likely economic outcomes.

- Approach and innovation: The invitation for Expressions of Interest should call for tenderers to outline indicatively and briefly their proposed approach to delivery of the project and services over the life of the contract. The tender should be reviewed and an assessment made as to whether it demonstrates an understanding of the public sector client's objectives and the service delivery outcomes required.

  When tenderers propose innovation solutions to the service delivery objectives, the procurement team must evaluate the risks associated with its implementation.

- Composition of consortium: The composition of the consortium proposing to deliver the project is an important consideration. The evaluation team should consider whether the role of each participant and the relationships between the parties have been clearly defined. The evaluation team should also consider

how members of the consortium will collaborate to deliver the necessary outcomes.

**Shortlisting Expressions of Interest**

The Eol evaluation needs to focus not only on one party, but all members of the consortium and the relationships proposed to operate between them.

The evaluation should develop a view on the capability of each tenderer to delivery consistently against the objectives of the public sector client and to work with the public sector client in a long-term relationship. In addition to the tenderer's ability to deliver the services, the evaluation should consider each entity's financial position and its ability to meet the requirements of the contract over the full term.

An appropriately experienced specialist person or agency should undertake a probity review of tenderers who may be capable of delivering the project. This should focus on the corporate standing of each member within each consortium, and identify any issues associated with current or previous operations which could cause probity concerns in the future. The probity review should also cover any international connection of the consortium.

The number of parties that are shortlisted will vary from project to project. However the objectives of the process should be to shortlist parties which the public sector client genuinely believes that they have the capability to deliver the project. In general, a list of three to four tenderers will be selected.

It is recommended that a list of more than four tenderers is likely to lead to some shortlisted tenderers losing interest as the chance of success may not warrant the significant investment of time and resources in preparing a tender.

A report setting out the results and conclusions of the evaluation is produced to provide a clear audit trail for the process, and of the reasoning behind the assessment. Tenderers that do not satisfy the pre-qualification criteria are informed as soon as possible, and offered feedback on their submission.

The evaluation process and recommendations should be documented and signed off by the evaluation team.

**REQUEST FOR PROPOSAL**

The shortlisted tenderers will be invited to submit an initial proposal on how the project will be delivered. They will receive the formal tender document issued by the public sector client. Its issue to shortlisted parties signals a commitment to delivery the project, subject to defined hurdles being cleared.

These documents provide detailed information regarding the background of the project, project purpose and objectives, the role of the public sector client in the project, the environment in which it exists and relevant policy considerations. For example, any analysis of legislative and regulatory impacts; feasibility studies; land use considerations; geological information; demand estimates and the like should be provided to the shortlisted parties. The public sector client's requirements for solutions and the criteria to be used for evaluation should also be provided.

In addition to the material provided, it is likely that tenderers will seek further clarification and advice during the bidding process. The public sector client should determine the arrangements in which clarifications are held and how tenderers should be assured that appropriate procedures have been implemented to protect their interests.

At this stage, tenderers are encouraged to include alternative value for money solutions for the public sector client's consideration. This may include alternative technical, commercial, financial and risk transfer ideas that offer best value for money.

**Project Brief**

The Project Brief provides further information regarding the project that facilitates the tenderers in preparing the proposal. The information provided in the Project Brief represents the basis in which the tenderers develop their solutions and tender price. Information contained should be as comprehensive as possible. The public sector client should ensure that sufficient time and expertise is invested in its development.

*Typical components of the Project Brief*

Key components of the Project Brief have already been developed in the Outline Business Case stage. A consideration period of time has passed between the Outline Business Case stage and the Request for Proposal stage, information contained in the Outline Business Case may become outdated. In addition, new information which is not available in Outline Business Case stage may become available in the Request for Proposal Stage. The public sector client has to ensure that updated information is provided in the Project Brief.

Typical elements of the Project Brief include

- Background information on the project's origin, including social, economic and financial drivers
- Defined scope and objective of the project and the public sector client's role in service delivery
- Output specifications, key performance indicators and the associated payment mechanism
- Risk allocation strategy
- Conclusions of project specific specialist reports, e.g. environmental, community service obligations'
- Legal, regulatory, policy or commercial constraints,

- Evaluation criteria, timeframes and deliverable
- Key arrangements relating to the formal bid documents, including rules and regulations covering presentation, communication, negotiation, reservation of rights, confidentiality and security
- Agency's position on changes to the Project Brief and treatment of non-conforming bids
- Other specific information requirements for the RFT process
- Economic structure, performance measures, proposed payment mechanism and any other commercial principles relating to the project

Development of a project brief for a PPP project is similar to that of a traditional project except the output specification, payment mechanism and the risk allocation matrix.

*The Output Specification*

Traditional procurement method provides input specification to the tenderers in which it clearly prescribes the procedures to be followed by the tenderers for satisfying all the project requirements. Output specification, on the other hand, lists out what is required from the tenderers, the extent and nature of the service to be provided, the minimum level of service standards to be achieved, details of monitoring and compliance and the interaction with the public sector client in delivery of the service.

The specification should also identify all the support services to be provided, particularly where there could be an assumption that some support services would be provided by the department. It should identify as far as possible all the service outputs that will or may be required throughout the term of the contract. Care should be given to the wordings used in describing the level of standards. They must be constructed in such a way that is measurable, achievable and realistic.

*Performance measurement and proposed payment arrangements*

Traditional procurement pays the bidder on a monthly basis, according to the amount of work completed. In a PPP project, payment will only be made to the operator when service delivery commences. Continuation of payment depends on the quality and standard of the service provided by the operator. If the service delivered fails to meet the required standard, the public sector client can reduce or cease payment. The Project Brief should lay out how the performance of the operator is measured, the mechanisms in which payments are made, are reduced or ceased.

*Risk allocation matrix*

Risk allocation matrix summarizes the preferred way of how risks are to be allocated between the public sector client and the bidder. In a PPP project, risks are allocated to the party who is in the best position to manage them. Some of the risks that are allocated to the private sector in the traditional contract are usually taken back by the public sector client under the PPP approach. The risk allocation matrix included in the

Project Brief is developed based on the reviewing and updating the preliminary risk allocation matrix constructed in the Outline Business Case.

**Project Contract**

The Project contract is part of the formal bid document. It presides over the relationship between the bidder and the public sector client throughout the contract period. It should be drafted with the assistance from legal advisers.

Given the typically long-term nature of the PPP project, it is inevitable that refinement to the service requirements take place during the contract period. It is important that the terms and conditions in the Project Contract are drafted with sufficient flexibility in order to accommodate inevitable changes without causing disadvantage to either or all parties.

The contract should be developed in parallel with the Project Brief and should be issued to all shortlisted parties at the same time. Key contractual issues include

- Tenure and access
- Contract flexibility
- Services and service commencement
- Performance monitoring
- Payment regime
- Intervening events and force majeure
- Insurance
- Agency step-in and safeguards
- Default and remedies
- Termination
- Dispute resolution
- Employee rights

The tenderers who are invited to submit proposals are given an opportunity to propose amendments to the terms and conditions in the Project Contract. Any proposed amendments accepted by the public sector client will be incorporated into the draft Project Contract

**Obtain Approval for Issue**

The Project Brief must be approved by the public sector client before it is released to shortlisted parties. The following issue should be discussed during the approval process:

- any changes to the previously approved service requirements, commercial principles, including risk allocation, or any other material aspect of the project;
- the proposed contract structure and the respective roles of the public sector client and the private party;
- the hurdles required to be cleared by tenders before the project will proceed (including a financial position offering value for money in comparison with the Public Sector Comparator);

- the proposed level of disclosure of the Public Sector Comparator to tenderers and confirmation that budget funding has been secured at Public Sector Comparator level;
- details of the shortlisted parties to whom the Project Brief is to be issued; and
- the proposed timeframe for execution of contracts and commencing service delivery.

Details of the number of copies released and the specific parties to whom they were released should be recorded and referenced to a unique identifier for each copy.

## EVALUATION OF TENDER

### Setting Up the Evaluation Team

Before assessment made on the proposal submitted by the shortlisted parties, a decision must be made on the appropriate structure of the evaluation team. It is common for separate teams to be established to assess the service delivery, facilities solution and commercial elements of tenders.

### Process of Tender Evaluation

1. Assess Compliance and Conformity

   Before beginning a detailed evaluation, the evaluation team assesses the compliance of each tender. This identifies tenderers who have not satisfied mandatory requirements for format, lodgement and any other mandatory requirements for the delivery, presentation and receipt of tenders.

   A preliminary assessment of conformity with the terms of the Project Brief and contract is also carried out, recognizing that other elements of non-conformity may be identified during evaluation.

   A tender that conforms to all these requirements is a conforming tender. A tender that does not confirm with all these requirements may be regarded as a non-conforming tender and may not be considered further.

   If, however, complying tenders are not sufficiently attractive in relation to the evaluation criteria, then any non-complying tenders may be evaluated without disadvantage.

   Conforming tenders may also include additional features or enhancements beyond the requirements of the Project Brief. Evaluation of such enhancement would require consideration of the service delivery outputs to be delivered by the enhancement. The evaluation should also raise the separate question of

whether the enhanced service delivery meets a priority need that justifies any further allocation of funds. The final evaluation should detail the cost to the public sector client of each enhancement and comment on the value for money of each proposal.

An evaluation team, subject to direction by the project director, may exercise discretion to judge a tender to be a complying or conforming tender, notwithstanding incidental departures from requirements of the Brief and contract.

2. Tenderer Presentations

Shortlisted tenderders may be invited to deliver a presentation, covering the key aspects of their proposal and clarifying matters identified in writing by the project director. This reduces the risk of misinterpretation and allows the procurement team to get a better feel for the basis upon which the tender has been developed and understand specific aspects in more depth before the detailed evaluation process begins.

Presentations should observe procedures set out in the project probity plan and may take place only after all tenders have been lodged. The probity auditor should receive advance notice of presentations and an equal opportunity must be given to each tenderer.

The presentations should take place after written proposals have been lodged, to ensure that no opportunities exist for tenders to be changed as a result of the discussion. This timing also provides the procurement team with some time to review the tenders and identify any issues that they would like tenderers to clarify.

3. Financial Evaluation

Financial evaluation is a key component of the evaluation. The financial evaluation centres around a comparison between the total costs to the public sector client of the payments reflected in each tender over the full contract term and the Public Sector Comparator.

If one or more of the tenders offers value for money in comparison with the PSC and meets all the other tender, risk allocation and service delivery requirements, the public sector client should move forward into contractual negotiations after tender evaluation.

In circumstances where none of the tenders offers value for money in comparison with the PSC, further analysis may be required, but in the absence of other offering net benefits. The project should be delivered through traditional methods.

The cost to the public sector client of each tender should be assessed on a discounted cash flow basis, taking into account all cash flows over the contract term including any residual value payable at the end of the term. The payments required to be made by the public sector client should be discounted at the appropriate current nominal discount rate to arrive at a net present cost. This allows tenders to be compared on a consistent basis, both against each other and against the PSC.

Care should be exercised against any inappropriate use of the financial model provided by tenderers. The underlying assumptions may not support sensitivity analysis or other purposes to which the model may be put. It may be advisable to involve the tenderer, or the tenderers' financial adviser, in any analysis of the model or in verification of any conclusions.

*Key issues of Financial Evaluation*

The financial evaluation of tenders requires a well structured approach and careful consideration of the risks to the public sector client. Tenders can easily be misinterpreted or risks not identified which can lead to the public sector client being exposed during final negotiations. Key areas to be focused on include: (1) viability of tender proposition, (2) certainty of financing, (3) sponsor support, (4) performance-based charges, (5) cash flow profile, (6) residual value/debt amortization profile, and (7) taxation assumptions.

*(1) Viability of Tender Proposition*

The evaluation team should focus on the components of a tender and properly assess the underlying assumptions. Tenderers should submit information regarding the key components of a tender, including building cost, financing structure and major cyclical maintenance items. Where revenue to the private party is not dominated by the service charge, tenderers should disclose the sources of the third-party revenue. Based on this information, the evaluation team should comment on:

- The reasonableness of capital costs and the likely extent of variation risk on any building component;
- The efficiency, pricing and deliverability of the financing structure;
- The level of reliance being placed in achieving bonuses for above-standard performance or volume/usage increases.

*(2) Certainty of Financing*

The commitment letters from the providers of debt and equity finance should be thoroughly reviewed and a risk of assessment made of whether the finance can be procured on the terms proposed. The review should be approached from financiers' perspective and not just that of the public sector client.

The evaluation should focus on whether the project cash flows and sponsor support show a proposition likely to meet the requirements of debt providers. Where the financing structure reflects a proposed capital markets issues, committed underwriting should be specifically stated as a prerequisite in the Project Brief.

*(3) Sponsor Support*

The level of contribution by the sponsor (members of the bidding consortium) should be evaluated. This is because if the level of contribution by the sponsor is low, it would be difficult to obtain debt financing.

Contribution of equity funds or guarantees from the sponsors means that, if the services are not delivered and service charges are reduce completely or partly, the sponsors have a genuine commercial motivation to overcome the problem. Without any contribution from the project sponsor, it will become totally dependent on the financiers acting to rectify the problem.

*(4) Performance-based Charges*

The evaluation should consider any proposed changes to the payment mechanisms which would result in an increase in payments. A signal may be a tender with a low service charge against the standard requirements but higher hurdles for abatements. The outcome could be a lower price against the base payments, but higher costs to the public sector client over the contract term.

*(5) Cash Flow Profile*

The profile of payments outlined in tenders should be assessed for any solvency issues for the private party. Tenderers sometimes desire to ‘back-end’ payments so that service charges start at a low level and escalate during the term of the contract. This may reflect a value for money financing structure, but assessment is needed of whether sufficient cash flow is available in the early years to support operating costs and debt. Back-ending may also have tax and balance sheet implications.

*(6) Residual Value/Debt Amortisation Profile*

The tender evaluation process should specifically assess the rate at which debt finance is to be amortised. This allows the procurement team to understand the level of debt outstanding at each stage of the contract term. Assumption of residual value risk by the private party may give a lower cost for services to the public sector client during the term, but this structure may also result in debt levels giving a higher step-in cost at any stage.

*(7) Taxation Assumptions*

The contract is usually drafted to allocate all taxation risks to the private party. The tender evaluation process should focus on the assumptions made about available tax deductions.

If the project structure assumes the deductions are available, the private party could face a much large tax liability than is reflected in its tender, with severe consequences for its viability. If the procurement team is concerned about these tax risks, the preferred tenderer should be required to obtain a ruling from the respective department to give the public sector client some assurance that the tender proposition is viable.

4. Physical infrastructure evaluation

This involves evaluation of issues concerned with physical infrastructure offered and other non-financial matters. This would necessitate the evaluation of areas such as service delivery and building assets, which is more subjective in nature.

The key principle that should be applied in evaluating the non-financial components of tenders is to focus on the outputs being sought by the tender process, and to examine the risk to the public sector client over the life of the contract. For example, the building evaluation should consider the ability of a proposed design to deliver the outputs required over the life of the contract and the flexibility the design provides to increase service capacity or accommodate other changes if required.

The tenders should also be reviewed against criteria such as degree of redundancy, flexibility of design, the proposed design agency, the aesthetic value of the design, technological superiority, robustness, occupational health and safety and environmental considerations.

In addition, tenders can be analysed, differentiated and ranked against the following the benefits and impacts on the public of the solutions outlined in the tender

- the adequacy of the proposed projects assessed against its ability to deliver the outcomes specified in the Project Brief, including
  - the level of confidence in the performance of assets;
  - required timing to achieve improved performance levels and credibility of benefits;
  - flexibility of infrastructure to changes in volume or scope; and
  - any legislation difficulties in implementation.
- design and construction in terms of functional, technical, operational and appearance criteria. this includes
  - the overall quality of engineering;
  - architectural and landscape design;
  - environmental considerations;
  - construction methods and work programs for the project;

- nominated resources;
- engineering services;
- overall layout and relationships between spaces;
- traffic management; and
- integration with service delivery and emergency management.

- ability of tenderer's management structure to undertake the project; and
- quality assurance program

5. Service Delivery Evaluation

Given the underlying expectation that the practices of specifying outputs and recruiting from the widest available skills will generate innovate service delivery solutions, evaluation of the service delivery components of PPP tenders will not be the same as the evaluation of traditional projects. In general, three aspects of the tenders are to be assessed: (1) the service that is offered, (2) the capability of an operator to deliver that service, and (3) the reliability of delivery over time.

*(1) The service that is offered*

The consideration is whether what is offered in the tender includes the full range of outputs required and at the specific level of performance. There will also be a need to examine qualitative matters such as considerations of client relationships and any impacts on the community generally. Tenders should be evaluated from the point of affordability and whether value for money, relates to the real needs of the public sector client or the community, is delivered by the service offered by the tender.

*(2) Capability*

Evaluation will focus on the experience, skills and relevant track record of the operator. There may be a need, depending on the staffing needs of service delivery, to examine the organization structure, staffing, training and research and development practices and plans of the operator.

*(3) Reliability*

There is also a need to assess the level of confidence in the ability of an operator to maintain service delivery standards over time, accommodating both foreseeable and unforeseeable developments. Although some contracts provide for competitive bidding of the operating component of the contract at regular intervals, careful assessment of tenders is still necessary.

The business plan for operations should demonstrate capacity to manage or absorb the effects of all the risk allocated to the operator. Consequently there should be evidence of scope to accommodate reasonable variations in economic conditions, labour market, competitive environment and other areas of risk. An

evaluation team will look for a sound record over a number of years, together with a sound plan into the future.

**Negotiate with Tenderers**

It may be necessary to negotiate before the preferred tenderer is finalized in order to ensure that the public sector client obtains the best outcome possible both in financial and service respects. However, negotiations should be used to pin down the commercial terms of the contract, with a view to ensuring that the contracted outputs will be delivered. It should be noted that it is not a normal practice to negotiate the land premium.

**Evaluation Reports**

A final evaluation report, summarizing the findings of the separate evaluation teams is prepared. This report includes a discussion on how each tender rank within each area of evaluation and an overall ranking of each tender. It should identify a preferred tenderer and a reserve tenderer as agreed by all members of the evaluation team and the basis on which such decisions are made. The advantage of appointing a reserve bidder is that the public sector client can revert to the reserve tenderer if contract negotiations with the preferred tenderer break down.

Key issues to be addressed in the evaluation report

- The financial propositions of each tender, the costs to government in net present cost, the expected annual cash flow and the key differences between the tenders;
- The service delivery propositions of each tender, the extent to which they meet government requirements and the presence of any enhanced outputs that are considered attractive;
- The robustness of the design and construction proposal;
- The potential risks to government entering into contract with each tenderer;
- The capability of each bidder to work well throughout the life of the project; and
- The flexibility of each proposal to accommodate changes in future requirements.

**Identification of the Preferred Tenderers**

If the tenders submitted by the tenderers satisfy the requirements of the Project Brief, based on the evaluation report, the project director, in consultation with the steering committee, should nominate one or more preferred tenderers. Typically a preferred tenderer and a reserve tenderer would be nominated. The public sector client should be briefed on the evaluation report and endorse the preferred tenderer recommendations.

If no tender meets the requirements of the Project brief, the project director should formally report on this situation. The report should include

- the evaluation results and any net benefits that may be gained by the public sector client if it accepts any of the tenders
- options available to the public sector client, with appropriate analysis; and

- a recommended course of action (e.g. to proceed with a modified project, not to proceed with the project, or to deliver the outputs through a traditional public sector channel).

## DETAILED NEGOTIATION WITH PREFERRED TENDERER(S)

If the public sector client only sets out minimum mandatory requirements in the tender documents and leaves the detailed terms to be negotiated with the tenderers, it is necessary to conduct detailed negotiations with the preferred tenderers. Normally, in Hong Kong, the public sector client would engage in full negotiations with only one, at most two tenderers.

If it is decided to conduct detailed negotiations with more than one tenderer, it is necessary to decide whether to negotiate with each tenderer on the basis of a set of common terms or not.

Doing so ensures greater simplicity for the public partner in terms of its comparison of tenders. It also carries some risk of loss of innovation and achieving optimum pricing proposals.

### Establishment of the Negotiating Team

A separate negotiating team, of no more than four to six people, should be set up and report to a project steering group in accordance with a predefined negotiation brief. Typically the team is led by the project director. Legal advisors, who play a role in supporting the negotiations, should also be a member of the team. The member who has the authority to make decision on behalf of the team should be clearly defined.

### Setting the Negotiation Framework

Negotiating teams need a clear negotiating strategy before negotiations begin, including the intended timetable.

A negotiating brief and associated negotiation procedures approved by the appropriate tender evaluation committee will have to be prepared.

1. Definition of Negotiation Issues

   The issues to be negotiated should be clearly set out, together with the public sector client’s position on each of them. In any event, negotiations must not result in a significant change either to the scope of the project itself or to any of the tenders submitted.

   Any significant alteration could invalidate the selection. For instance, if a preferred or successful tenderer were permitted to negotiate a significant

reduction in its obligations under the project from those in the tender documents, then the unsuccessfully tenderers would have grounds to argue that there has been unfair discrimination.

Depending on the nature of the public-private partnership, there may be needed to negotiate a number of agreements. These include

- a development agreement that defines the successful proponent's obligations and rights regarding the design and construction aspect of the projects
- a management and operations agreement that defines the successful proponent's obligations and rights regarding the management and operations of the facility
- a transfer agreement, which may be required where an interest in property is being transferred. Some forms of public-private partnership may involve more than one transfer (e.g. transfer to private partner at outset and transfer back to the public sector client at the end of the term)

2. Control of Drafting

The drafting process should be managed by the legal advisers to the procurement team, including management of version control and assessing which parties need to review changes. The project director must ensure that amended documents are only circulated to parties with a direct interest, to avoid any unnecessary discussions and delays.

3. Record of Agreed Matters

All matters agreed upon during the negotiations should be recorded in meeting notes and agreed at the end of each meeting. This reduces the risk of issues being revisited and provides clear instructions for contract drafting purposes.

4. Do not revisit Agreed Issues or introduce New Ones

The project director should not admit any new issues into negotiations and the parties should agreed not to re-open issues already agreed.

5. Agreed Timetable for the Negotiation

The project director should agree with the preferred tenderers the timetable for negotiation. This is important to prevent delaying tactics and ensure the overall timetable for project implementation is upheld.

6. Agreed Dispute Resolution Process

The project director should determine an agreed process with the preferred tenderer for overcoming any situation in which no progress can be made. This typically involves seeking resolution from senior management. The parties need

to ensure that appropriate senior managers are accessible throughout the negotiations.

## FINAL VALUE FOR MONEY ASSESSMENT ON THE PREFERRED TENDER

Once a preferred tenderer has been identified, final value for money assessment should be conducted to confirm that the preferred tenderer offers value for money before seeking approval from the public sector client. Final value for money assessment involves making comparison of cost of the preferred tender with the Public Sector Comparator. Such comparison should take into account of non-quantifiable factors and risks, costs and benefits that are not included in the tenders or the PSC.

During the course of procurement, there may be changes in the specific requirements of the Output Specification and the Project Agreement. Changes may include the scope of project in terms of service requirements and the allocation and valuation of risk. The cost implications of these changes on the PSC should be determined and the PSC should be updated to reflect such changes before making comparison with the cost of the preferred tender.

There may be circumstances that the cost of the preferred tender exceeds the PSC cost. A judgment has to be made as to whether the additional benefits provided by the preferred tender are worth the additional cost. A more comprehensive assessment, which takes into account the non-financial and non-quantifiable factors, should be conducted. Examples of such factors are unquantifiable risks or functional, operational or appearance aspects of the physical assets, speed of project delivery, quality of service, security of supply and reduction of service delivery cost. It is only that these additional value justify a higher cost than the Public Sector Comparator should the preferred bid be submitted to seek for the approval from the public sector client.

### Other Tender Evaluation

Many of the evaluation criteria in the Project Brief will take account of non-financial and non-quantifiable factors. Some may also allow financial considerations that are not in the Public Sector Comparator to emerge. In assessing value against the Public Sector Comparator, an assessment must be made of any net additional value offered by a tender and whether this value justifies a cost higher than the Public Sector Comparator.

Without limiting the field of consideration, the consideration of the other evaluation criteria may include the value of unquantifiable risks or functional, operational or appearance aspects of the proposed project. It may be, for example, that the tender offers flexibility that was not considered in construction of the PSC. It could be that

the tender offers a solution that would reduce the cost to the public sector client of delivering core services.

Value that is identified in this step is value that is not present in the PSC. This value may represent the value that the public sector client is seeking to harness through competitive processes and through engaging the resources of both private and public sectors. Consequently, this consideration of net additional value can result in a more expensive tender being found to offer greater value for money.

**Costs and Risks not in the PSC or Tenders**

The net present cost of acceptance of a tender should be adjusted to take account of relevant quantifiable costs and risks that are not included in either the PSC or the tender. Such costs and risks could include:

- Any higher government-funded transaction costs (including the costs of a procurement team) from that time forward (previous costs are sunk costs for this purpose);
- Any higher contract management costs; and any additional unmitigated sponsor risk associated with PPP approach compared to traditional procurement.

The results of the monetary and non-monetary comparisons should then be combined to provide an overall view on whether the preferred tender represents improved value for money when compared to traditional procurement. In some cases, when the preferred tender results in a greater financial cost than traditional procurement but also results in significant additional non-monetary benefits, a judgement has to be made as to whether the additional benefits provided by the preferred tender are worth the additional cost.

The basis for such decisions should be clearly recorded in the value for money assessment and included in the Final Business Case. During the course of procurement, there may be changes in the specific requirements of the Output Specification and the Project Agreement. The PSC should be updated to reflect such changes. Examples of such changes may include

- changes to the price base used to cost the project
- changes to the scope of the project in terms of service requirements and performance standards
- changes to both the allocation and valuation of risk arising from the detailed risk assessment
- changes to the key contractual terms, including contract duration and project phrasing.

**SUBMISSION OF FINAL BUSINESS CASE**

Before awarding the contract to the preferred tenderer, the department needs to seek approval from government. A Final Business Case (FBC) is prepared for seeking member approval prior to subsequent award of contract. The Final Business Case should

- report on the conclusions of the Request For Proposal and set out the final scope and cost of the project
- be a supporting document to a public sector client's submission once a preferred tenderer has been selected
- include a qualitative assessment of the preferred tenderer and a final PSC comparison against the preferred tender to conform that best value for money is achievable and
- provide government with an indication of the public sector client's forward plan for proceeding with the project and finalizing a contract with the preferred tenderer.

**Contents of Final business case (FBC)**

The FBC should be presented in the same format as the Outline Business Case (OBC). Where there are any material changes between what was envisaged and presented at OBC and what is proposed to be agreed with the proposed Service Provider, this should be highlighted in the FBC. A FBC should consist of (1) executive summary, (2) project objectives, (3) financial issues and affordability, (4) stakeholder consultation, (5) procurement process and competition, (6) risk allocation and accounting treatment, and (7) contract and payment mechanism.

*(1) Executive summary*

This section of the FBC should provide a short summary of the key issues included in the detailed sections of the FBC. It should include a succinct description of the negotiated project on the following issues:

- The Service Provider
- Term of the Contract
- The expected investment regime included in the Contract
- The estimated economic benefits and non-economic benefits of the project
- The fit of the project with other public sector client's policies and strategies
- The quality of the service delivery arrangements and negotiated design against that envisaged in the OBC
- A summary of the performance standards and performance targets agreed with the Service Provider, including where appropriate how these fit with any statutory targets.

*(2) Project Objectives*

The FBC should set out how the proposals in the negotiated Contract meet the objectives developed as part of the OBC, and if there are departures from those objectives, the reasons for the departure should be stated.

If the objectives have been developed further since the OBC was approved by members, or if new requirements have come to light during the procurement of the project, such as successor standards to those envisaged at the time the OBC was prepared, appropriate commentary should be included in the FBC.

*(3) Financial Issues and Affordability*

This section of the FBC could usefully set out the negotiated position on each of the following topics:

- Value for money: an estimate of the value of money savings anticipated from procuring the service through a PFI arrangement would have been included in the OBC. This should be updated with out-turn costs of the PFI scheme. In addition, if there have been material changes to the assumptions used in determining the Public Sector Comparator (PSC) at the OBC stage, appropriate commentary should be included on these and an updated PSC calculated and included in the FBC.
- Affordability: The public sector client will have made an assessment of the affordability of the project at the OBC stage. This computation should be updated using out-turn figures for the negotiated PFI contract. Commentary should be included on how any material changes since the OBC was prepared are to be dealt with.

*(4) Stakeholder Consultation*

The FBC can usefully outline how the relevant stakeholders have been consulted throughout the procurement of the PFI project. This commentary might usefully refer to each of the following:

- Internal stakeholders: Outlining how the project has been developed by the procurement broad, in consultation with members, the strategic/stakeholder board, relevant departments and other internal stakeholders.
- Community and Staff: outlining how the local community and relevant staff have been consulted throughout the process.

The FBC could also usefully explain how the consultation arrangements are to continue throughout the term of the contract.

*(5) Procurement Process and Competition*

The FBC should include a summary of the competitive process followed to ultimately select the Service Provider and the decisions taken at each stage of the procurement process. As a minimum, it is suggested that appropriate commentary be included in the FBC in respect of the following stages:

- The Invitation to Expression of Interest

- Pre-qualification and short-listing
- Evaluation of Request for Proposal
- Selection of Preferred Tenderer
- Negotiations to financial close

*(6) Risk allocation and accounting treatment*

A section should be included in the FBC summarizing the negotiated position as regards the allocation of key risks in the PFI project. In particular, there should be appropriate commentary on those areas where there has been departure from the risk allocation position envisaged at the time the OBC was prepared.

*(7) Contract and Payment Mechanisms*

The FBC should set out the position on whether any statutory processes have still to be completed, such as planning permissions, and if appropriate, how and when those statutory processes will be progressed and where the risk and responsibilities for completing that work lie.

The FBC should include a summary of the key contractual issues negotiated as part of the PFI contract. A copy of the negotiated contract should be submitted with the FBC. Commentary should also be included in this section of the FBC on pertinent aspects of the payment mechanism agreed with the Service Provider, such as the key components of the payment mechanisms, and how the performance of the Service Provider will be monitored.

Commentary on the key commercial issues specific to this project, such as the followings, may be included as well. They are

- The position agreed on the treatment of taxation
- The anticipated third party revenues included or anticipated in the Contract
- The proposals included in the Contract as regards any revenue sharing arrangements
- Any proposals for benchmarking and market testing.

**Contract Award**

Once the approval process is complete, the contract is awarded to the successful tenderer

A suitable date and venue is nominated for contract executive. A public announcement of the contract and the successful tenderer must be made, in ways that conform with the public sector client’s policy and procedures.

# CHAPTER 5

# RISK MANAGEMENT

Risk management is a process which aims at providing a structured way of identifying and analyzing potential risks, and devising and implementing responses to reduce their impact, and monitoring the effectiveness of actions that have been undertaken.

Risk management may mean different to different stakeholders. To the public sector, risk management refers to the identification, assessment and evaluation of what risks are to be retained and transferred, and to formulate strategies on how risks are to be mitigated. To the SPV consortium who is responsible for the construction and operation, risk management refers to the assessment and evaluation of the risks that are allocated to them so that risks are priced in such a what that the cost of managing them can be properly recovered. To the financiers who are responsible for funding the project, risk management means that the identification, assessment and evaluation of risks that are pertained to loan default, and formulation of the risk mitigation strategies, usually in terms of the interest rates charged over the loans, restrictions to the borrowers to safeguard themselves against the risks.

The process of risk management consists of (1) risk identification, (2) risk assessment, (3) risk allocation, (4) risk treatment and (5) risk monitoring and review. The events that are likely to affect the project objectives are identified as risks. These risks are then analyzed and evaluated by examining the likelihood and consequence they could have on the project objectives. Appropriate measures are then formulated to treat the risks so as to reduce the likelihood of occurrence and the seriousness of the impact. One of the key features of risk management in a PPP project is that risks are explicitly allocated between the public sector client and the private party by examining who can manage the risk in the most cost effective way. Each party will then be responsible for treating the risks that have been assigned to him. Finally, the risk monitoring and review is carried out to ensure that the proposed measures are effective in managing the risks and new measures are formulated to manage any new risks that have been emerged during the middle of the project.

Implementation of the risk management should start with risk identification at the feasibility stage, followed by risk assessment and risk treatment. However these processes should be carried out continuously throughout the project.

## RISK IDENTIFICATION

Risk identification involves identifying risks that may arise during the project. Any event that may have a detrimental effect on achieving the objectives of the project would be considered as a risk. For example, during the option appraisal stage, any events that would affect the net present value of a particular option would be considered as a risk; during the procurement stage, any event that has an adverse impact on chosen procurement option in delivering the value for money would be considered a risk; during the construction stage, any event that would have a detrimental impact on the time, cost and quality of the project would be considered as risks.

Risk identification is a cyclical process and should be continued throughout the project. No matter how rigorous the risk identification process is carried out, it is inevitable that some risks will arise as the project proceeds. Different risk identification techniques should be employed at different stages of a project. Before the project commences, proactive risk identification techniques should be employed. These involve imagining potential future events that would affect the achievement of the project objectives. As the project proceeds, some unpredictable events which have an adverse effect on the project objectives would arise. Reactive risk identification techniques which involve identification of risks after actual losses have occurred should be employed.

### Proactive Risk Identification Methods

Common methods for risk identification include brainstorming and workshops, focus group session, checklists, flowcharts, questionnaires, scenario building. Hillson (2002) identified three additional approaches to identify the upside risks as well. They are SWOT analysis, constraints and assumption analysis and force field analysis. No one method is better than the others. A combination of techniques can be used if it is appropriate.

People who are involved in the risk identification process should have experience in a PPP project. Usually they are the stakeholders representing the public sector clients and the private sector. Those who are involved in the identification process should be engaged in a PPP project before. External consultants representing the stakeholders may be necessary in some circumstances, depending on the type of identification methods and the kind of expertise involved.

### Checklist

A checklist consists of a list of risks that are identified from previous PPP projects. It is often considered as an idea elicitation aid which helps to generate ideas about potential risks for the current project, particularly at the beginning of the risk

identification process. Based on the checklist, stakeholders can base on their experience and judgment to evaluate the applicability of the risks included the checklist to the current project. They should exclude any risks that are not applicable to the current project and include those risks that have been missed out in the checklist. Because of its simplicity in nature, the checklist approach is the most common risk identification approach in the construction.

**Brainstorming**

The brainstorming process is originally a problem solving method borrowed from business management. It involves redefining the problem, generating ideas, finding possible solutions, developing selected feasible solutions and conducting evaluation. The brainstorming is considered to be a risk workshop in which all major project stakeholders together identify the risks that are going to affect the project and their corresponding impacts. One of the advantages of gathering the project stakeholders together is that it can produce a much larger quantity of useful information in less time and can take advantage of group thinking.

Risks identified are recorded in a risk register, which is part of the Risk Management Plan for regular review and reporting of risks. A risk register should provide a full description of the risks including source, risk owner, likelihood of occurrence, impact, timeframe of the risk, proposed mitigation strategies and the time these strategies are to be taken. While at this stage, only the risks and their description are available. Other information will become available in the subsequent stages of the risk management. In preparing a risk register for a PPP project, it may be relied on a template Risk Register. However, the public sector client should carefully assess the suitability of the template Risk Register against the current project and should also involve its external advisors and members of the risk management team in preparing the Risk Register. A typical list of risk is provided in the Appendix A.

A typically brainstorming group consists of between 10 and 15 people. These people are preferably those who will be involved in risk quantification and for managing risks in the construction and the operation stages of the project. Examples are core service operational managers, project managers, technical consultants such as architects and design engineers, financial and legal advisers.

The brainstorming should be served by a facilitator, who is responsible for managing the risk identification process. He should be an independent and experienced person with no interest in the decision outcome. Before the brainstorming begins, the facilitator should brief the stakeholders the purpose of the brainstorming, the expected outcome and what constitutes a risk in the current project. Since these people are of different background, they may have different understanding on what constitutes a risk. The facilitator should ensure that each of them clearly understands the definition of risk before the brainstorming process begins. The facilitator will then ask the project stakeholders to list out his or her ideas regarding the potential risks in the current project on a paper anonymously. He will conduct open discussion on the risks regarding their applicability and categorization.

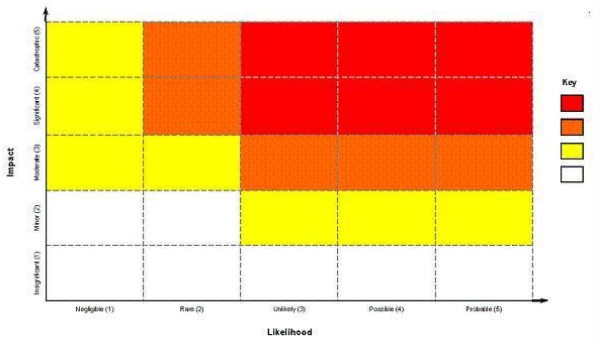
### Categorization of Risk

Risks of similar nature are grouped under the same risk category. There is no standard method of categorization. Some classify the risks according to the parties who will be responsible for managing the risks. Examples of the risk categories are (1) site risk, (2) design, construction and commissioning risk, (3) sponsor and financial risk, (4) operating risk, (5) market risk, (6) network and interface risk, (7) industrial relations, (8) legislative and government policy, (9) force majeure, and (10) asset ownership.

Other classifies the risks according to their own classification system. For instance, Li et al. (2005) proposed a meta-classification of risk which divides the risks into macro level, meso level and micro level. The macro level of risks refers to risks that are external to the project itself. The meso level of risks refers to the risks and their consequences which occur within the project. The micro level of risks refers to risks that are found in the stakeholder relationships formed in the procurement process. They differ from the meso level of risks in that they are party-related rather than project related. Examples of risks that fall into each of this level are listed in the Appendix B. With this meta-classification, it is claimed that risks could be considered in terms of the nature of their relationship to projects (Li *et al*., 2005).

No matter which categorization system is adopted, the selected categorization should enable a better understanding about the risks, how the risks are allocated between parties and what actions should be taken for managing the risks.

## RISK ASSESSMENT




Risk analysis refers to the assessment on the likeliness of risk occurrence, its consequence, the time at which the risks will occur and the duration. It also informs decisions on how best to manage risks, by drawing attention to risks factors which require particularly careful monitoring and management, and enabling suitable risk management measures to be implemented. With the implementation of risk assessment, decision makers are informed about how to prioritize the resources in the light of limited resources.

### Basic Principle to Risk Assessment

The basic principle of risk assessment is to determine the value of a risk based on its probability and consequence. Probability refers to the likelihood of the occurrence of a risk. It is represented by a number which lies between zero and one inclusive. If the probability of a risk is said to be zero, it suggests that its occurrence is impossible. On

the other hand, if the probability of a risk is said to be one, it suggests that we are certain about the occurrence of such risk. The consequence of risk measures the difference between the base cost of the component and the expected outcome if the risk eventuates.

The value of a risk is then given by = Probability x Consequence

Depending on the availability of data and the stages at which the risk assessment is performed, there are different approaches to determine the value of a risk: (1) qualitative, (2) semi-quantitative and (3) qualitative approaches.

**Qualitative Approach**

Qualitative approach are mostly employed at the early stage of the project in which information do not permit a valid quantification process. It is also used when past data regarding the risk is not available.

In the qualitative approach, the significance of the risk can be determined by constructing a matrix which shows the degree of significance according to the risk's consequences and its likelihood of occurrence. An example of a matrix with four priority level is shown in the Table 1.

Table 5.1: Four Priority Level Matrix

| | Consequences | | | | |
|---|---|---|---|---|---|
| Likelihood | Insignificant | Minor | Moderate | Major | Catastrophic |
| Almost certain | Medium | Medium | High | High | Extreme |
| Likely | Medium | Medium | Medium | High | Extreme |
| Possible | Low | Medium | Medium | High | High |
| Unlikely | Low | Low | Medium | Medium | High |
| Rare | Low | Low | Medium | Medium | Medium |

Based on the table, a risk is said to be of extreme significance if it is characterized by

- 'Almost certain' likelihood of occurrence and 'Catastrophic' consequence; or
- 'Likely' likelihood of occurrence and 'Catastrophic' consequence.

Similarly, a risk is said to be of high significance if it is characterized by

- 'Almost certain' likelihood of occurrence and 'Moderate' consequence; or
- 'Almost certain' likelihood of occurrence and 'Major' consequence; or
- 'Likely' likelihood of occurrence and 'Major' consequence; or
- 'Possible' likelihood of occurrence and 'Major' consequence; or
- 'Possible' likelihood of occurrence and 'Catastrophic' consequence; or
- 'Unlikely' likelihood of occurrence and 'Catastrophic' consequence.

Similarly, a risk is said to be of medium significance if it is characterized by

- 'Almost certain' likelihood of occurrence and 'Insignificant' consequence; or

- ‘Likely’ likelihood of occurrence and ‘Insignificant’ consequence; or
- ‘Almost certain’ likelihood of occurrence and ‘Minor’ consequence; or
- ‘Likely’ likelihood of occurrence and ‘Minor’ consequence; or
- ‘Possible’ likelihood of occurrence and ‘Minor’ consequence; or
- ‘Likely’ likelihood of occurrence and ‘Moderate’ consequence; or
- ‘Possible’ likelihood of occurrence and ‘Moderate’ consequence; or
- ‘Unlikely’ likelihood of occurrence and ‘Moderate’ consequence; or
- ‘Rare’ likelihood of occurrence and ‘Moderate’ consequence; or
- ‘Unlikely’ likelihood of occurrence and ‘Major’ consequence; or
- ‘Rare’ likelihood of occurrence and ‘Major’ consequence; or
- ‘Rare’ likelihood of occurrence and ‘Catastrophic’ consequence

Similarly, a risk is said to be of low significance if it is characterized by

- ‘Possible’ likelihood of occurrence and ‘Insignificant’ consequence; or
- ‘Unlikely’ likelihood of occurrence and ‘Insignificant’ consequence; or
- ‘Rare’ likelihood of occurrence and ‘Insignificant’ consequence; or
- ‘Unlikely’ likelihood of occurrence and ‘Minor’ consequence; or
- ‘Rare’ likelihood of occurrence and ‘Minor’ consequence; or

*Interpretations for the Rating Scales*

Each scale point has its own interpretation. The likelihood of a risk and its consequence are described by choosing the scale point with interpretation that best describes the risk. Interpretation for each scale point can be obtained from risk management guides, such as the AS/NZS 4360: 1999. Alternatively, a new set of interpretations can be developed for the current project. The interpretations of a five-point scale used by the AS/NZS 4360:1999 and Cooper et al. (2005) in describing the likelihood of occurrence are shown in Table 2, and the interpretations of the scale points for assessment of the risk consequences are shown in Table 3.

Table 5.2: Interpretations of Scale Points for Assessment of Likelihood of Occurrence

| Scale point | Likelihood interpretations provided by | |
|---|---|---|
| | AS/NZS 4360 | Cooper et al. (2005) |
| Almost certain | Expected to occur in most circumstances | Very high, may occur at least several times per year |
| Likely | Likely to occur in most circumstances | High, may arise about once per year |
| Possible | Might occur at some time | Possible, may arise at least once in a 1 – 10 year period |
| Unlikely | Could occur in certain circumstances | Not impossible, likely to occur during the next 10 to 40 years |
| Rare | May only occur in exceptional circumstances | Very low, very unlikely during the next 40 years |

Table 3: Interpretations of Scale Points for Assessment of Risk Consequence

| Scale Point | Consequence Interpretation |
|---|---|
| Insignificant | No injuries, low financial loss |
| Minor | Minor injuries, rapid containment on-site, medium financial loss |
| Moderate | Medical alert and light injuries, on-site containment requires outside assistant, high financial loss |
| Major | Extensive injuries, loss of production capability, off-site release with no detrimental effect, major financial loss |
| Catastrophic | Deaths occur, toxic off-site release with detrimental effect, huge financial loss |

**Semi-quantitative Approach**

The semi-quantitative approach elaborates on the qualitative approach. It relies on the same principle in assessing the likelihood of occurrence and consequence. Both the likelihood of occurrence and consequence are assessed in terms of scale point. While each scale point is represented by qualitative description in the qualitative approach, each scale point is represented by pre-determined values in the semi-quantitative approach. This permits a more refined and precise estimates of risk. In addition, different people would attribute different values to the probability and consequence of a risk according to their risk attitude. With predetermined values attached to each of these rating points, it can reduce the errors which arise out of the differences in people's risk attitudes.

*Assigning Numeric Measures to the Likelihood of Occurrence*

The probability is expressed with a number which lies between zero and one. The larger the number assigns to a risk, the higher the probability the risk will materialize, and vice versa. Numeric measures for 'Rare', 'Unlikely', 'Possible', 'Likely' and 'Almost certain' are commonly represented by '0.1', '0.3', '0.5', '0.7', and '0.9' respectively. These numbers only indicate the relative frequency of occurrence and they are best used when comparative results are required.

*Assigning Numeric Measures to the Consequence*

In assigning the numeric measures for the 'consequence' scale points, two methods are used: 'absolute value' and 'relative weightings'. In the 'absolute value' method, the numeric measure for each consequence is expressed in terms of monetary value. Since it may be difficult to estimate the potential loss specifically, the monetary value is expressed in a range of say $50,000 to $100,000, with reference made to the project under consideration. For example, a risk rated with 'Minor' consequence represents a loss of $50,000 to $100,000; whereas a risk rated with 'Major' consequence represents a loss of $300,000 to $ 500,000.

In the ‘relative weightings’ method, the consequence of a risk is expressed in a relative sense in terms of a percentage of the total project costs. For example, a risk rated with ‘insignificant’ consequence is expressed as 10% of the project costs; whereas a risk rated with ‘catastrophic’ consequence is expressed as 80% of the project costs.

The loss of each project will vary, depending on the scale and type of the project. With the use of ‘absolute value’ method, it is necessary to modify the pre-determined value of each scale point to suit the specific conditions of each project. This results in the formulation of numerous risk matrices. With the use of the ‘relative weightings’ approach, this can be avoided as this approach describes the magnitude of consequence in a relative sense. Once the top management has determined the weightings of each consequence, the risk matrices can be applied to other projects.

*Significance of a Risk*

The significance of risks in both approaches is determined by constructing a matrix, showing either the monetary loss of a risk or the risk factor of a risk under particular probability and consequence. Table 4 shows the matrix for the absolute value method and Table 5 shows the matrix for the relative weightings method.

Table 5.4: Significance of Risks using Absolute Value Method

| Likelihood | | Consequences | | | | |
|---|---|---|---|---|---|---|
| | | Insignificant < $50,000 | Minor $50,000 – $100,000 | Moderate $100,000 – $300,000 | Major $300,000 – $500,000 | Catastrophic > $500,000 |
| Almost certain | (0.9) | < $45,000 | $45,000 – $90,000 | $90,000 – $270,000 | $270,000 – $450,000 | > $450,000 |
| Likely | (0.7) | < $35,000 | $35,000 – $70,000 | $70,000 – $210,000 | $210,000 – $350,000 | > $350,000 |
| Possible | (0.5) | < $25,000 | $25,000 – $50,000 | $50,000 – $150,000 | $150,000 – $250,000 | > $250,000 |
| Unlikely | (0.3) | < $15,000 | $15,000 – $30,000 | $30,000 – $90,000 | $90,000 – $150,000 | > $150,000 |
| Rare | (0.1) | < $5,000 | $5,000 – $10,000 | $10,000 – $30,000 | $30,000 – $50,000 | > $50,000 |

Table 5.5: Significance of risks using relative weightings method

| Likelihood | | Consequences | | | | |
|---|---|---|---|---|---|---|
| | | Insignificant 0.05 (5% of project costs) | Minor 0.2 (20% of project costs) | Moderate 0.4 (40% of project costs) | Major 0.6 (60% of project costs) | Catastrophic 0.8 (80% of project costs) |
| Almost certain | (0.9) | 0.045 | 0.18 | 0.36 | 0.54 | 0.72 |
| Likely | (0.7) | 0.035 | 0.14 | 0.28 | 0.42 | 0.56 |
| Possible | (0.5) | 0.025 | 0.10 | 0.20 | 0.30 | 0.40 |
| Unlikely | (0.3) | 0.015 | 0.06 | 0.12 | 0.18 | 0.24 |
| Rare | (0.1) | 0.005 | 0.02 | 0.04 | 0.06 | 0.08 |

**Quantitative Approach**

The quantitative approach to risk assessment also determines the value of a risk by multiplying its probability and consequence. It differs from the previous two approaches in that specific numbers are assigned to represent the probability and consequence of a risk. There are two approaches in estimating the probability of a risk: simple and advanced valuation techniques.

The simple valuation technique involves a subjective assessment of the probability of a risk, while the advanced valuation technique estimates the probability of a risk by construction of probability distributions. The advantage of the simple valuation technique is that it is easier to construct and interpret than advanced valuation technique. However, for risks that are expected to have a serious impact on the project, advanced probability technique is preferred.
The use of either method depends on the availability of data and the significance of a risk.

*Simple Probability Valuation Technique*

A group of project stakeholders will be appointed to assign a number which represent their best estimates on the each risk's likelihood of occurrence. The number is assigned based on the project stakeholders' judgment, which are formed as a result of their past experience, and data from previous projects. Data on previous projects can be obtained from sources such as:

- Past records;
- Relevant experience;
- Industry practice and experience;
- Published literature;
- Test marketing and market research;
- Experiments and prototypes;
- Economic, engineering or other models;
- Specialist and expert judgements.

There are two approaches to elicit subjective probabilities of the project stakeholders: direct and indirect methods. The direct method involves asking them to assign a

number to indicate their judgement on the chances of risk materializing. This approach assumes that the selected project stakeholders are a rational decision maker and are well aware of the rudiments of probability. Based on their knowledge and experience, they will assign a number from 0 to 1 indicating the chance of risk materializing. The greater the number, the greater the chance he believes that the risk will materialize. The indirect method involves asking the project stakeholders a series of questions. The questions are designed in such a way that it is possible to impute the subjective probability from the answers given by them.

**Risk Assessment Techniques at the Option Appraisal Stage**

*Risk Premium*

Risk premium provides a single value for the expected impact of all risks. Instead of calculating the value of a risk based on its probability and consequence, the value of a risk is determined based on the base cost, e.g. 20% of the base cost. For example, if the construction cost of a project is estimated to be $25,000,000, the estimated value of the risk is

$25,000,000 x 0.2 = $5,000,000

Assessment of risk using risk premium is particularly useful at the early stage of a project in which there is insufficient information for estimating the likelihood of risk occurrence. Risk premium only gives a very rough estimate on the impact of the risks on the project outcome.

*Expected Monetary Value*

The expected monetary value is similar to risk premium in that the expected value of all risks, rather than individual risk is determined. In this approach, the probability of the consequence a risk under a number of scenarios, rather than one scenario, will be considered.

The number of scenarios to be considered can be ranged from two scenarios – best and worst case, to three scenarios – pessimistic, likely and optimistic. Summing up the probabilities of all scenarios must equal one. The expected monetary value is thus given by the summation of the consequence multiplied by its associated probabilities in each scenario.

Table 5.6: Calculation of monetary value

| | Optimistic | Most likely | Pessimistic |
|---|---|---|---|
| Probability | 0.2 | 0.5 | 0.3 |
| Consequence | $800,000 | $1,000,000 | $1,500,000 |

The expected monetary value of a project is given by

$800,000 x 0.2 + $1,000,000 x 0.5 + $1,500,000 x 0.3
= $1,110,000

*Sensitivity Analysis*

Sensitivity analysis is used to test the vulnerability of options to unavoidable future uncertainties. Given the likely range of values that key variables may take in the presence of uncertainties, the way in which the conclusions may alter will be considered.

This is particularly useful at the option appraisal stage for understanding how uncertainties affect the choice between options. Very often, the advantage of the preferred option will be eroded in light of the uncertainties. The use of sensitivity analysis can test the robustness of the appraisal conclusions.

This also provides value information on whether a proposal should proceed or not in spite of the risk. A switching value will be calculated which shows how a variable would have to fall or rise to make it not worthwhile in undertaking an option.

**At the Business Case Stage**

Quantitative analysis of each individual risk is required during the construction of the PSC in which the value of risk is one of the components of the PSC. However, it may not be possible to quantify every risk because of the lack of data and/or the difficulties in quantifying the consequence. In addition, the availability of time and resources also affect the choice of approaches.

In general, approach that gives reliable result should be employed to assess risks that have a serious impact on the project. Quantitative approach with advanced probability technique should be used to assess risks which are classified as ‘Extreme’ and ‘High’ significance in the qualitative or semi-quantitative approaches.

Details of valuing risks in the PSC will be discussed in the chapter ‘Public Sector Comparator’.

**At the Procurement Stage**

The value for money will hinge on the level and cost of risk transferred to the private sector. The risk assessment carried out at the business case stage is based on the public sector client’s preferred risk allocation. The private sector may negotiate with the public sector client on the allocation of certain risks. In addition, new information regarding the risk will have changed the value of the risk. This may also affect the results of the value for money assessment.

Before the award of the contract, final value for money assessment should be performed to ensure that the modifications made to the allocation of risk after negotiations with the private sector also deliver value for money. This necessitates quantification of the transferred and retained risks again to ensure that value for money is delivered for the finalized allocation of risks.

## RISK ALLOCATION

Following the assessment of the risks would be to determine what actions to take in response to the risks that have been identified. Each party will be responsible for treating the risks assigned to them. Before the formulation of any risk treatment plans, the public sector client should determine what risks are to be transferred and what risks are to be taken back. Unlike traditional procurement option that maximum risk transfer is practiced, the PPP approach follows the principle of optimal risk allocation in allocating risks.

The principle of optimal risk allocation principle suggests that risks should only be taken by the parties who are in the best position to control them, taken into account the public interest.

There is a cost for managing the risk. The party who is at the best position to manage the risks should be able to do it at the least cost. With the private party being assigned the risks that it is capable of managing them, it can manage the risks at a lower cost than the public sector. If, however, the private party is assigned the risks that are beyond their control, it will either refuse to take the risk, or to charge a higher premium to reimburse the extra risk. This will escalate the overall cost of the PPP approach.

When determining the lists of risks to be transferred to the private sector, the public sector client should also consider the private party's capability and resources to cope with the risk and the risk appetite of the private party in taking the risk.

In general, the public sector client should only transfer those risks that it has not been managing well in the past, or that it has little experience in managing. It should retain those risks that it can manage well in the past and those risks it is in a more informed position to control than the private sector. There are some risks that should be taken by neither party and these should be shared between the parties. These include

- risks that neither party is in a better position to control the risks, e.g. force majeure risk;
- risks that are beyond the control of either party, e.g. movements in general price levels, or exchange rates; and
- risks that may be difficult to identify in advance or their consequences is difficult to measure.

### Standardized Risk Allocation Matrix

Allocation of risks can be achieved by evaluating the capabilities of both parties and their previous experience with respect to the identified project risks. Alternatively, the

public sector client can rely on a standardized risk allocation matrix which states its preference on how risks are to be allocated between parties. An example of the risk allocation strategy proposed by the Department of State Development (2002) is provided in the Appendix C.

This matrix is constructed based on the risk management information obtained from previous PPP projects. It identifies the common types of risks to be retained and transferred in previous PPP projects. The advantage of using the list is that it simplifies the tender process and minimizes bid costs. The risk allocation method suggested in the matrix only represents the preferred position of the public sector client. It does not represent the final risk allocation position. The private party would assess the public sector client's preferred list of risk allocation and indicate their willingness to accept or not. Very often, the private sector will be given the opportunity to negotiate with the public sector client on the ownership of certain risks. The negotiations will continue until both parties agree on how risks are to be allocated.

**Risk Matrix**

After the finalization of the allocation of risk, a risk matrix which represents the risk profile of the current project should be constructed. This risk matrix, unlike the standardized risk allocation matrix which identifies the public sector client's preferred allocation of risk only, identifies the allocation of risks agreed by both the public and private parties, together with the proposed risk treatment options, and other information including a description of each risk, its magnitude and likelihood of occurrence. This provides an immediate view of the project's risk profile. It is also an important document to be submitted to the relevant agency for approval of the PPP option.

The risk matrix is a useful tool for managing risk during the different lifecycle of a PPP project. During both pre-tender and tender phases, the risk matrix can assist the public sector client to define relevant project risks and its proposed allocation. During negotiations the matrix can work as a checklist to ensure all risks are addressed. After the contract has been signed, the matrix can be a useful summary of the risk allocation effected by the contract. The value and usefulness of the risk matrix is directly related to the way the risks are treated.

## RISK TREATMENT

Risk treatment involves identifying the options for treating the risks, preparing risk treatment plans and implementing them.

### Risk Treatment Options

Based on the finalized risk allocation matrix, both parties will be responsible for treating the risks allocated to them. The risk treatment options are formulated with an aim to reduce the likelihood of occurrence or the impact of risks or both of them. Implementation of risk treatment options is needed both before and after the risk occurs. No matter how vigorous the identification of risk has been carried out, unforeseeable risks as well as new risks would arise as the project proceeds. Implementation of treatment options after risk occurs aim to reduce the financial loss. In general, risk treatment options can be divided into five types: risk transfer, risk reduction, risk acceptance and risk prevention.

### Risk Transfer

This strategy involves passing a risk onto the party who can effectively manage the risk at a lower cost. There are some risks, such as the design and construction risks, the private party is in a better position to manage. This strategy is usually most favoured by the client as he can be exempted from bearing the potential loss and rectifying the situation if risks materialize. However, the client should only aim at an optimal rather than maximum level of risk transfer. If the private party is asked to manage those risks which are beyond their capability, the client would need to pay a higher cost than is necessary if he retains the risk.

To ensure effective implementation of this strategy, the client has to ensure that adequate incentives are provided for the parties taking the risk. If not, the parties may opt not to rectify the situation when risks materialize.

### Risk Reduction

This strategy involves the implementation of measures to control and/or to minimize the likelihood of risk occurrence, and/or to reduce the adverse effect of the risks on the projects. It is inevitable that the client retains some of the risks in a project. With the implementation of this strategy, it is hoped that the loss or the adverse impact can be minimized even if risks materialize.

### Risk Acceptance

This strategy involves doing nothing but to accept the consequence of the risk if it materializes. Not all risks will require a treatment option. Implementation of risk

treatment options involves cost. They will be implemented only if the benefits of implementation of the risk treatment options are greater than the cost.

There are some risks in which

- Nothing could be done to minimize its likelihood of occurrence and/or the consequences
- The likelihood of occurrence is so low that it would be more economic to tolerate the risk rather than implementing any measures to prevent its occurrence

Under these circumstances, it would be appropriate to tolerate the risk and accept the consequences if it materializes.

**Risk Prevention**

This strategy involves taking those actions that eliminate any chances of risk materializing. This would involve eliminating sources of risk such as adoption of another design, or alternative the work procedures so as to avoid the consequence of the risks. Such a strategy is implemented when the consequences of the risk is so severe that no party is found to be suitable for taking the risk. The implementation of this strategy may generate other risks which will require the formulation of appropriate risk treatment options.

**Material Adverse Effect Regime**

There are some risks which are shared by both parties as neither party is found better than the others in managing them. A material adverse effect regime is a risk mitigation tool that can assist in allocating difficult areas of risk. It provides that when a risk within the specified categories materializes, and it has a material adverse effect on the project, the parties will negotiate in good faith to agree on the appropriate method of redress to achieve the pre-agreed outcomes.

**RISK MONITORING AND REVIEW**

The profile of the identified risks will change, and new risks will emerge as a project proceeds. Control measures that are proposed to mitigate the risks may become inadequate. The purpose of monitoring and review is to monitor the effectiveness of risk treatment measures, to identify any new risks that arise as the project process and formulate the risk treatment measures accordingly.

**Risk management Plan**

A risk management plan sets out the measures to reduce and control risks, the process involved in reduction and control of risks and summarizes the risk management

process to date, including what risks have been realized and what risks have been prevented. The actions and outcomes of the risk treatment actions should be reported separately in the Risk Register. A risk register is a management tool that ensures regular review and reporting of risks as part of the risk management plan.

A risk management plan should contain:

- The identified risk
- Action and detailed measures to treat the risks
- The cost of risk treatment actions
- Critical dates
- Who is responsible for treating the risk

**Risk Register**

A risk register is first constructed at the risk identification stage. It is updated as more information is collected regarding each identified risk. At the risk monitoring and review stage, a risk register should contain the following information of each identified risk:

- Risk category - the risk category in which the identified risk belongs to, e.g. construction risk, site risk;
- An description of the risk - A full description of the risk including source, what it could affect and the potential scope of the impact;
- Risk likelihood - The probability of the risk occurring;
- Risk consequence - The impact of the risk, usually in monetary value, if it occurs;
- Initial risk rating - The priority of the risk, such as low, high and extreme;
- Existing controls - The list of measures that are proposed to mitigate the risk;
- Adequacy of existing controls - The effectiveness of the proposed measures in mitigating the risk;
- Timeframe - The length of time the risk is expected to affect the project, or over what stage of the project the risk is applicable;
- Date reviewed - Date of last risk review;
- Date action taken - Date when action was taken to mitigate the risk.

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**APPENDIX A**

A typical list of risks in a PPP project by the Department of State Development (2002)

- The risk that preferred site is in third-party ownership and has to be acquired for the project.
- Risk that existing structures are inadequate to support new improvements.
- The risk that unanticipated adverse ground conditions are discovered which cause construction costs to increase and/or cause construction delays.
- The risk that necessary approvals may not be obtained or may be obtained only subject to unanticipated conditions that have adverse cost consequences or cause prolonged delay.
- The risk that additional approvals required during the course of the project cannot be obtained.
- The risk that the project site is contaminated requiring significant expense to remediate.
- The risk that a site chosen by the Private Party (i.e. not the Government-preferred site) is contaminated requiring significant expense to remediate.
- The risk that prior to financial close offsite pollution has been caused from a Government preferred site (any site) to adjacent land.
- The risk that prior to financial close offsite pollution has been caused from a non-Government preferred site to adjacent land.
- The risk that after financial close offsite pollution is caused to adjacent land.
- The risk that the use of the project site over the contract term has resulted in a significant clean up or rehabilitation obligation to make the site fit for future anticipated use.
- The risk of costs and delays in negotiating indigenous land use agreements where project site may be subject to Native Title or risk injunction and/or invalidity of approvals.
- The risk of costs and delays associated with archaeological and cultural heritage discoveries.
- The risk that tenure/access to a non-preferred site that is not presently owned by Government or Private Party cannot be negotiated.
- The risk that the design of the facility is incapable of delivering the services at anticipated cost.
- The risk that events occur during construction that prevent the facility being delivered on time and on cost.
- The risk that either the physical or the operational commissioning tests which are required to be completed for the provision of services to commence, cannot be successfully completed.
- The risk of the contracted service and its method of delivery not keeping pace, from a technological perspective, with competition and/or public requirements.
- The risk that prior to completion interest rates may move adversely thereby undermining bid pricing.
- The risk that the private party is:
  (1) unable to provide the required services or becomes insolvent;
  (2) later found to be an improper person for involvement in the provision of these services; and

(3) subject to financial demands which exceeds its or its sponsors financial capacity causing corporate failure;

- The risk that when debt and/or equity is required by the Private Party for the project it is not available then and in the amounts and on the conditions anticipated;
- The risk that the Government imposes a requirement, by reason of a change in law, policy or other similar event, which is specifically directed at the project and results in additional funding being needed to rebuild, alter, re-equip etc the facility which cannot be obtained by the Private Party;
- The risk that a change in ownership or control of the Private Party results in a weakening in its financial standing or support or other detriment to the project;
- The risk (upside) that at completion or other stage in project development the project finances can be restructured to materially reduce the project's finance costs;
- The risk that before or after completion the tax impost on the Private Party, its assets or on the project, will change;
- The risk that required inputs cost more than anticipated, are of inadequate quality or are unavailable in required quantities;
- The risk that Government's output requirements are changed after contract signing whether pre or post commissioning;
- The risk that a subcontract operator may fail financially or may fail to provide contracted services to specification;
- In a user pays model, the risk of a reduction in economic activity affecting demand for the contracted service;
- In a user pays model the risk of alternate suppliers of the contracted service competing for customers;
- The risk of a demographic/socio-economic change affecting demand for contracted service;
- The risk that value of payments received during the term is eroded by inflation;
- The risk that, where the facility relies on a complementary Government network, that support is withdrawn or varied adversely affecting the project;
- The risk that an existing Government network is extended/changed/re-priced so as to increase competition for the facility;
- The risk that the delivery of core services occurs in a way that is not specified/anticipated in the contract adversely affects the delivery of contracted services;
- The risk that the delivery of contracted services adversely affects the delivery of core services in a manner not specified/anticipated in the contract;
- The risk of strikes, industrial action or civil commotion causing delay and cost to the project;
- The risk of a change in law/policy of the State Government only, which could not be anticipated at contract signing and which has adverse capital expenditure or operating cost consequences for the Private Party;
- In some cases, the risk of a change in law/policy (at other levels of Government) which could not be anticipated at contract signing and which causes a marked increase in capital costs and/or has substantial operating cost consequences for the Private Party;

- Where there is a statutory regulator involved there are pricing or other changes imposed on the Private Party which do not reflect its investment expectations;
- The risk that inability to meet contracted service delivery (pre or post completion) is caused by reason of force majeure events;
- The risk that design and/or construction quality is inadequate resulting in higher than anticipated maintenance and refurbishment costs;
- The risk that design life of the facility proves to be shorter than anticipated accelerating refurbishment expense;
- The risk of 'loss' of the facility or other assets upon the premature termination of lease or other project contracts upon breach by the Private Party and without adequate payment;
- The risk that on expiry or earlier termination of the services contract the asset does not have the value originally estimated by Government at which the Private Party agreed to transfer it to Government.

**APPENDIX B**

Lists of risk at the macro-, meso- and micro-level suggested by Li *et al*., (2005)

**Macro-level risks**

- unstable government
- Expropriation or nationalization of assets
- Poor public decision-making process
- Strong political opposition/hostility
- Poor financial market
- Inflation rate volatility
- Interest rate volatility
- Influential economic events
- Legislation change
- Change in tax regulation
- Industrial regulatory change
- Lack of tradition of private provision of public services
- Level of public opposition to project
- Force majeure
- Geotechnical conditions
- Weather
- Environment

**Meso level risks**

- Land acquisition
- Level of demand for project
- Financial attraction of project to investors
- High finance costs
- Residual risks
- Delay in project approvals to investors
- Design deficiency
- Unproven engineering techniques
- Construction cost overrun
- Construction time delay
- Material/labour availability
- Late design changes
- Poor quality workmanship
- Excessive control variation
- Insolvency/default of sub-contractors or suppliers
- Operation cost overrun
- Operational revenues below expectation
- Low operating productivity
- Maintenance costs higher than expected
- Maintenance more frequent than expected

**Micro level risks**

- Organization and co-ordination risk
- Inadequate experience in PPP
- Inadequate distribution of responsibilities and risks
- Inadequate distribution of authority in partnership
- Differences in working method and know-how between partners
- Lack of commitment from either partner
- Third party tort liability
- Staff crises

**APPENDIX C**

Risk allocation method suggested in the standardized risk allocation matrix of the Department of State Development (2002)

The common types of risks that are retained by the public sector client include

- Environmental
- Sponsor risk
- Further finance due to changed requirements of government
- Change in ownership
- Changes in output specification outside agreed specification range
- Changes in law/policy
- Residual value on transfer to government

The common types of risks that are transferred to the private party

- Acquisition of site
- Existing structure
- Site conditions
- Approvals
- Environmental
- Clean up and rehabilitation
- Availability of site
- Design
- Construction
- Commissioning
- Technical obsolescence or innovation
- Interest rates pre-completion
- Financing unavailable
- Tax changes
- Inputs
- Operator failure
- General economic downturn
- Competition
- Demographic change
- Inflation
- Withdrawal of support network
- Changes in competition network
- Interface
- Industrial relations and civil commotion
- Changes in law/policy
- Regulation
- Maintenance and refurbishment
- Technical obsolescence
- Default and termination

The common types of risks that are shard between parties include

- Shared
- Native title
- Cultural heritage
- Refinancing benefit
- Force majeure

# CHAPTER 6

# PROJECT AGREEMENT FOR PPP PROJECT

There are three basic assumptions in a PPP scheme. Firstly, the party contracting with the public sector is a Special Purpose Vehicle (SPV) with sub-contractors providing the actual performance on its behalf. Secondly, the project involves some development or a construction phase, followed by an operational phase during which the full service is provided. Thirdly, the project is wholly or partly financed by limited recourse debt.

In a PPP project, the public sector party buying the service is referred to as the public authority and its counterpart as the contractor, with the overall scheme referred to as the project. The agreement entered into between the authority and the contractor is referred to as the contract.

## DURATION OF CONTRACT

There should be a duration specified in the contract between the public authority and contractor. It usually specifies a "service commencement date" to distinguish the time from the signing of the contract and before the service period. Factors to be considered when deciding on the duration of the contract include:

- The service requirements of the authority
- The possibility of alternative uses of assets for the public authority
- The affordability of the service for the authority, taking into account the economic life of the assets
- The need for and timing of major refurbishment or asset refreshment programmes during the contract
- Term of the senior debt and possibility of refinancing
- Option to extend the term of the contract by entering into a further contract period with the initial contractor

## SERVICE COMMENCEMENT

After the contract is signed, there is usually a development phase during which the contractor carries out its development obligations and puts in place the operational procedures. During this period, the public authority wants to know if the contractor is going to deliver the service on time and in a way which meets all contracted requirements.

**Public Authority's Role**

The design, construction, operation, maintenance and ultimate performance of the output specification are the contractor's responsibility, and the public authority should not take any responsibility for this risk. Correspondingly, the contractor should be afforded the freedom to manage its activities without interference. The public authority's role prior to service commencement will normally include:

- Reviewing and commenting upon the contractor's designs, maintenance and operational procedures;
- Viewing and observing tests of any equipment being developed;
- Administrating the agreed process for the contractor or itself to propose changes to the output requirements, constraints on inputs or the contractor's proposals;
- Defining the output requirements and any constraints within which the output requirements must be achieved;
- Reviewing the contractor's proposals for achieving the outputs in terms of approach, method, resources, timetable, management and organisation; and
- Negotiating and agreeing with the contractor all contractual terms, including the procedure for either party proposing and implementing a change in service.

**Submission of Designs and Information to the Public Authority**

Although the contractor is responsible for the design development, the public authority knows its own service requirement. Consultation with the authority and adoption of any comment made remains at the contractor's risk. The procedure for submitting and commenting on design issues should be capable of giving all parties the reassurance they need. The contract should therefore set out a mechanism for:

- The contractor to submit designs and information to the public authority and its representatives;
- The contractor to submit minor design changes which do not have any impact on cost or the service and which the public authority can accept without the change in service mechanism having to be implemented;
- The authority to comment on such submissions within an agreed time period; and
- The discussion of and adoption by the contractor of any comments by the public authority.

**Quality Management Systems**

The authority retains the right to audit the contractor's quality management system which includes the right to examine or inspect works or activities on or off-site. The contractor provides such assistance and access as the public authority requires and responds to any recommendations which result from an audit.

**Acceptance and Service Commencement**

Before service commencement, the contractor should demonstrate that the arrangements will meet the output specification in the contract. The contract should set out in detail:

- The form of the tests, inspections or demonstration to be carried out by the contractor;
- The timetable for the tests;
- The consequences of a failure to pass a test;
- The notice of the tests to be given by the contractor to the authority;
- The responsibility for the cost and organisation of resources for the tests;
- The access for the authority to witness the tests;
- The documentation required by the authority as evidence of the results of the tests;
- Who is responsible for assessing satisfaction of the tests – this should, in most cases, be done by joint assessment by the public authority and the contractor or by an independent third party;
- The timing and procedure for acceptance of service commencement if the results of the tests are satisfactory.

The public authority will not accept stage of work prior to the delivery of the full services. In certain projects, it may be appropriate for the authority to commence payment before a complete service is available. The principal examples:

- In road projects, where the authority allow traffic to use the road once certain safety standards have been achieved, although construction may not be fully completed.
- In accommodation projects, the authority may accept service commencement where certain minor aspects of the construction works are incomplete but which are not integral to the contractor's ability to provide the main Service.
- In light rail projects where a portion of the repayments are derived from fare revenues.
- In certain projects, there may be aspects of the project for which the public authority retains a part of the risk deliberately, as it will ultimately retain responsibility for a part of the overall service.
- In projects in which service commencement is phased, then an appropriate phasing in the introduction of payments may be appropriate.

**PROTECTION AGAINST LATE SERVICE COMMENCEMENT**

The contract must ensure that the public authority is protected against late service commencement by the contractor in a way which gives the authority value for money, taking into account the type of loss the authority may suffer and the need for any contingency plans that are put in place. In addition to the non-payment of the unitary charge, the public authority needs such protections as liquidated damages, performance bonds, parent

company guarantees and/or long-stop date. These types of protections may increase the price, so the public authority must consider carefully their effect on value for money.

**Liquidated Damages**

Liquidated damages for delayed service commencement are a genuine pre-estimate of the losses or damages the public authority will suffer if the contractor fails to commence service delivery on time. Liquidated damages may prove value for money where the costs the public authority incurs as a result of the delay are so great to justify the increased expense to which such liquidated damages give rise.

Liquidated damages may also be justified where the public authority has contributed a valuable asset to the project, so an opportunity cost is incurred. If the contractor is not going to be able to deliver the service on time, but is able to find some form of alternative, the public authority may agree that this alternative service may be provided for a certain period for a reduced unitary charge.

**Performance Bonds**

Performance bonds are given by construction contractors as a form of guarantee of completion. They can be called by the recipient when the planned service commencement date is missed.

**Parent Company Guarantees**

The public authority expects to obtain parent company guarantees from the parent companies to the contractor and/or the sub-contractors to support the obligation to deliver the service on time. However, this should not be a pre-condition to acceptance of a tenderer's bid. Rather, the necessary protection for the authority can be provided through the project documents, collateral warranties and/or direct agreements between the sub-contractors and the public authority.

**Long-Stop Date**

Service commencement is not allowed to be delayed indefinitely due to contractor default. The authority may impose a long-stop date after which the contract may be terminated if the service has not yet been commenced. The long-stop date is often fixed by reference to the planned service commencement date. The date chosen should be reasonable.

**Bonus Payments for Early Service Commencement**

Sometimes, bonus payments are paid for early service commencement. It should not be under an obligation to accept early service commencement. It should only accept if it offers value for money. Early service commencement may prove good value for

money if there is a critical demand for the service or if it would benefit the authority financially.

If the public authority accepts early service commencement, the contractor's revenue stream will commence earlier. The public authority has the choice between bringing the expiry date of the contract forward to retain the length of the original service period or retaining the original expiry date, thereby extending the original service period.

**SUPERVENING EVENTS**

The contractor undertakes to ensure service commencement by a fixed date and to provide the service for the duration of the contract. There may be circumstances in which the contractor should fairly be relieved from liability for failure to provide the service. A balance must be struck between the encouraging the contractor to manage the risk and protecting the public authority from non-performance. Supervening events for which some relief is appropriate are divided into three categories:

- Compensation events – i.e. events which the contractor should be compensated;
- Relief events – i.e. events which are best managed by the contractor and for which the contractor bears the financial risk; and
- Force majeure events – a limited set of event which arises through no fault of either party.

**Compensation Events**

Compensation events are designed to cater for events which are at the public authority's risk and which result in a delay to service commencement and/or increased costs to the contractor. These events include the authority's breach of an obligation, authority changes and discriminatory or specific changes in law. A practical consequence of a compensation event is that the planned service commencement date may have to be postponed. The start date of the contractor's revenue stream is also delayed and/or additional costs are incurred. The contractor may incur finance charges and additional costs. The common approach is to retain the original expiry date and compensate the contractor for its loss. The contractor's liability for liquidated damages will also be relieved for the period of delay.

**Relief Events**

Relief events are events which prevent performance by the contractor of its obligations at any time, in respect of which the contractor bears the financial risk in terms of increased costs and reduced revenue, but for which it is given relief from termination for failure to provide the full service. The relief events may include:

- Fire, explosion, lightning, storm, flood, earthquakes, riot and civil commotion;
- Failure by any statutory undertaker, utility company, government authority or other like body to carry out works or provide service;
- Any accidental loss or damage;
- Any failure or shortage of power, fuel or transport;
- Any strike, lockout, go-slow or other dispute affecting the industry.

The contract may have similar provisions during both the construction/development phase and the service period. The financial effects of delays caused by relief events are borne by the contractor. If a relief event occurs prior to service commencement, any long-stop termination date will be put back. There should be no extension to the contract owing to a relief event.

**Force Majeure Events**

The force majeure provision is to give the affected party relief from liability and, if the event continues for a certain period, to give the parties an opportunities to terminate the contract. The force majeure events only include events which have a catastrophic effect on either party's ability to fulfil its obligations. Force majeure events may include war, civil war, armed conflict or terrorism; nuclear, chemical or biological contamination; and pressure waves caused by devices travelling at supersonic speeds which directly causes either party to be unable to comply with all or a material part of its obligations under this contract.

**INFORMATION WARRANTIES**

The contractor takes full responsibility to verify information. Contractors have accepted this risk in projects in which the due diligence is small, particularly the project involves only a new service. If the contractor bears the risk of information being inaccurate, then its bid price may increase to reflect the level of risk assumed.


The public authority is careful in warranting any information it provides. Warranties do not extend beyond information on which the contractor must rely for its bid. Accordingly, the public authority seeks to minimise any warranties unless:

- The public authority is the sole source of such information or such information cannot be verified by the contractor at reasonable cost;
- The public authority is confident in the accuracy of such information or is able to confirm its accuracy without significant expense;
- The public authority will obtain better value for money as a result.

## SERVICE REQUIREMETNS AND AVAILABILITY

Contracts with availability based payments must define what is meant by “available”. The definition of availability should concentrate on the core functions of the service and consist of objective, measureable criteria, so that it is clear to both parties whether or not those criteria have been satisfied. The criteria are not necessarily limited to physical aspects, but also include any soft services which are a core function of the service.

### Payment for Availability and Weighting of Critical Areas

Payment for availability of the service varies according to each project. In accommodation projects, accommodation should be allocated into “units”. The availability test will be applied to each unit and the unitary charge will vary according to the number of “units” available. In other types of project, there may be a single availability test applied to the whole service.

Where the service is divided into areas, the financial consequences of unavailability of an area depend on its criticality level, as some areas are critical to the provision of the service whilst others are less so. The contract must specify which areas are most important and allocate them a higher weighting. The effect of weighting can also be achieved through other means, for example, by allowing shorter rectification periods for key areas before the contractor suffers deductions.

### Rectification of Unavailability

The contract usually provides for a rectification period without triggering the start of a period of unavailability. The rectification period depends on the criticality of the area or function and the nature of the project. If the contractor rectifies the failure within the rectification period, the service is deemed to have been available and no availability deductions are made. If the contractor fails to rectify the failure, the service is deemed to have been unavailable and availability deductions are made.

### Service Unavailable but Used

The contract also specifies what happens if the public authority continues to use the services, despite the defects which would render that service unavailable. Various factors should be considered such as whether the public authority’s continued use prevents the contractor remedying the defect; and whether the public authority is able to use any alternative service (e.g. provided by the contractor or a third party). The parties may agree that:

- The service is deemed available if the public authority does not stop using it within a specified time period;
- A proportion of the availability fee is paid based on what part of the service is available;
- In exceptional cases, if the service is unavailable but used, then no payment is made.

**Planned Maintenance**

Maintenance is required to keep any facility at the appropriate standard to meet the output specification throughout the life. Planned preventative maintenance should be planned and agreed in advance so that which units or areas will be affected is clear. No deduction for unavailability or performance deductions when agreed preventative maintenance is taking place as planned.

**MAINTENANCE**

The contractor should ensure on a continuing basis that at all times its maintenance and operating procedures are sufficient to ensure that the service is continuously available, it can maintain the design intention of the assets to achieve their full working life, and the assets are handed back to the authority on the expiry date in a good condition.

**Sinking Fund**

The unitary charge normally includes amounts to cover the contractor's anticipated future expenditure on maintenance. Therefore, the contractor usually builds up a sinking fund over some years in anticipating of significant capital expenditure in future periods. Maintenance should be left at the contractor's risk and the authority should not attempt to prescribe the quantum, location or availability of a sinking fund. However, to protect themselves in the event of contractor default, the senior lenders have a charge over the sinking fund as security.

**Transfer of Assets at End of Contract**

In projects where the assets are not necessary to revert to the authority on termination, and the contractor is taking a risk on their residual value, then it is in the interests of the contractor properly maintain any assets. In contrast, if the assets are to revert to the public authority on termination at no cost or a fixed price, then the authority has to ensure that the price it is paying for the service during the term of the contract includes coverage for appropriate maintenance obligations. Generally, the transfer to the public authority at the end of the contract will be at zero cost. In these circumstances, the contract should provide for sums to be retained in the final years if hand-back surveys reveal that significant maintenance is likely to be required to

ensure that assets meet the handover requirements at the end of the term of the contract.

## PERFORMANCE MONITORING

The contract normally sets out the level of performance required, the means to monitor the contractor's performance against such required level, and the consequence for the contractor of a failure to meet the required level.

### Setting the Performance Level

To encourage innovation and optimise risk transfer, the contract specifies the required performance level through output requirements rather than prescriptive inputs. In some cases, there may be no appropriate comparators or benchmarks available. In such circumstances, a suitable performance regime will need to be carefully worked out by the public authority and the bidders during the competitive stages.

### Monitoring

The contract provides a mechanism to enable the authority to monitor the contractor's performance against the specified outputs so that the performance measurement system can operate effectively. Monitoring may occur at three levels:

- A systematic monitoring the contractor through a quality management system;
- A review of the quality management system of the contractor by the authority with certain planned and random spot checks; and
- The ability of users to report failures.

### Consequences of Poor Performance

The contract sets out the consequences of any failure by the contractor to perform to the standard required by the output specification. A common approach is for the contractor to incur a specified number of performance points for each failure, with the number of points incurred varying according to the seriousness of the failure. The contract sets out the level of points imposed for each failure to meet a specified performance output.

There is a link between the seriousness of the failure, the number of points accrued and the potential financial impact on the contractor. The accumulation of performance points does not usually have an immediate financial impact on the unitary charge. Deductions start once a certain threshold level of points is exceeded. Performance points cannot be earned back retrospectively by the contractor performing above the standard required.

## PRICE AND PAYMENT MECHANISM


No payments are made until the service is available. There is a single unitary charge for the service which is not made up of separate independent elements relating to availability or performance. The single unitary charge is only paid to the extent that the service is available.

### Direct Financial or Indirect Non-financial Incentives

If the contractor fails to perform, there can be both direct and indirect incentives to remedy the failure. The direct approach involves immediate deductions from the unitary charge and depends on availability of the service. The indirect approach depends on the level of performance of the available service and involves substandard performance being addressed by the award of performance points which will vary according to the severity and regularity of the breach. A combination of deductions for unavailability and under-performance may be used to address failure by the contractor.

In practice, a variety of payment mechanism structures is used across various project types from availability based mechanisms to service based and usage based mechanisms. For many projects, the unitary charge is based on the number of available places or units. Substandard performance leads initially to performance points accruing and only indirectly to deductions from the unitary charge once a certain level of points has accrued. For some other projects, the unitary charge can be based on a full provision of the overall accommodation requirement and the payment mechanism simply determines the deductions for unavailability and/or substandard performance. There are no separate payment streams for each of the non-core services.

## SET-OFF

The public authority has the right to set off amounts owed to it by the contractor against amounts due to the contractor under any contract between the contract and the public authority. The financier only agrees to the public authority having the right to set off any ascertained amount owed by the contractor under the contract documents. Any amount to be set off is applied against the next payment of the unitary charge.


**CHANGE IN SERVICE**

The service requirement should take into account not only the public authority's current requirements, but also its future requirements. Changes may be necessary to cater for changes in the public authority's requirements which could not be anticipated or quantified at contract signature.

The public authority needs to serve a notice setting out the intended change and require the contractor to provide an estimate of the technical, financial, contractual and timetable implications of the change within certain period of time. The intention is for the contractor to provide quickly an estimate of the implications of the proposed change. The public authority should recognise that the contractor's financiers may not likely allow the contractor to agree to any change which would increase project risk or reduce the rate of return. If the contractor is fully protected against the consequences of authority change, there should be no objection by its financiers.

If the change is sufficient to require the contractor to seek additional finance and the contractor is unable to put in place the finance, the public authority should reserve the right to fund the change through another method (e.g. by providing the necessary funding itself). The public authority must ensure that the finance provided represents good value for money.

The estimates and quotations should be a fair estimate of the likely implications of the change. If the parties disagree, the matter should be resolved by an independent third party. Once the price is agreed or determined, the contractor should incorporate the relevant change.

If a public authority's change requires capital expenditure, then the public authority should meet such costs by a lump sum or staged payments as they are incurred unless the contractor is able to fund the costs itself and amortise them through an increase in the unitary charge in a way that is good for money.

Any increase in operating costs resulting from the change is normally met by an increase in the unitary charge. If the change reduces the contractor's costs, then an appropriate reduction should be made to the unitary charge.

**Small Works Changes**

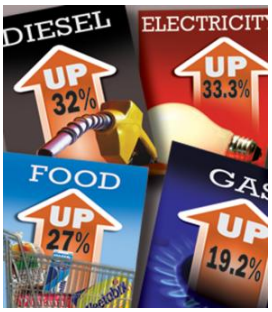
The public authority may make several requests in respect of minor change to the service in order to facilitate efficient management of the contract. The contractor is to provide a schedule of rates at the beginning of each contract year, which applies for small works changes to be implemented by the contractor. The schedule of rates also includes labour costs and materials elements for small works change to be carried out on day work basis.

### Contractor Changes in Service

The contractor is encouraged to find ways of delivering the service more cheaply and efficiently. If quality is maintained, then the public authority should not object and both parties share in the benefits. However, the public authority has the right to object to certain changes in the means of delivery. In such cases, the contract provides a procedure for the contractor to serve a notice of a change, giving the authority an opportunity to object on reasonable grounds within a reasonable time period.

A contractor generated change will not normally be expected to result in an increase in the unitary charge, but to allow the same service to be delivered more cheaply, a better service to be delivered at the same price, or a combination of the two. If the contractors' costs will be reduced by the contractor generated change, a reduction in the unitary charge can be agreed as part of the procedure.

## PRICE VARIATIONS




### Indexation

The contract sets out the unitary charge for the entire contract term. Due to the uncertainties of inflation rates over a long term contract, the payment mechanism usually include arrangements for indexing the unitary charge agreed at contract signature. If there is no indexation mechanism, the contractor is likely to have to build in contingency into its price to cover inflation risk and this is unlikely to give the public authority value for money. The contract specifies the type of index to be applied and whether it applies to the unitary charge wholly or in part.

### Benchmarking and Market Testing of Operating Costs

In some contracts, it may not be appropriate to have any price variation mechanism (other than indexation) to address unforeseen changes in operating costs. Although it is in theory sensible to compare costs to ensure that value for money continues, the practice of benchmarking and market testing are much more difficult and sometimes impossible. Generally, only soft services are appropriate for either benchmarking or market testing. Soft services are those services such as facilities management services in an accommodation project to the extent they do not involve a significant capital outlay in their performance or affect the value of any capital asset under the contract. There are a number of different arrangements as follows:

- No obligatory benchmarking, but either party can trigger a review of the unitary charge after 10 and 15 years of the service period if it believes that there has been a change of more than, say, 5% in certain aggregate costs beyond the contractor's control affecting the original level of return;
- A five yearly benchmarking exercise of the full range of soft services, on a basis to be agreed between the parties (adjustment to the unitary charge or service

requirement will only occur if there is a more than, say, 5% variation between cost and benchmark cost);
- Performance related facilities management payments being subject to a benchmarking exercise every five years in some projects, irrespective of the percentage cost change (the availability payment is not subject to benchmarking in such projects); and
- Market testing where the parties fail to agree on the appropriate price variation under any of the benchmarking methods above.

**Benchmarking**

The term benchmarking means the process by which the contractor compares either its own costs or the cost of its sub-contractors providing soft services against the market cost of such services. If the relevant costs are higher than market costs, a reduction in the price charged to the public authority should be made on an agreed cost-sharing basis to reflect the differential. If costs are lower than market costs, any price increase must be justified by the contractor. The procedure for carrying out a benchmarking exercise is as follows:
- On certain fixed dates, the contractor compares certain of its costs (e.g. what it pays its sub-contractors providing soft services) with equivalent prevailing market cost (e.g. what it would have to pay other sub-contractors to provide the relevant service) and, if appropriate, proposes a variation to the unitary charge;
- These fixed dates should be 12 months prior to the date on which any changes in the unitary charge are proposed to take effect and the exercise should last no more than 6 months (to allow a market testing to occur);
- If the market cost is higher than the contractor's current costs, there is no need to adjust the unitary charge if the current sub-contractor is still obliged to provide the service at the lower price (it may be that the subcontractor concerned is simply more efficient than the rest of the market);
- If the market cost is higher than the contractor's current costs, and the current sub-contractor is contractually entitled to review its price then the unitary charge may be adjusted;
- If the market cost is lower than the contractor's current costs, then there should be an adjustment to the unitary charge. This could be that the sub-contractor is clearly not as efficient as its competitors. The price decrease should encourage the contractor to take appropriate steps to reduce its price;
- If the public authority and contractor cannot agree on any cost increase or reduction, then the soft service concerned should be market tested; and
- The public authority should have the right to inspect the contractor's and sub-contractor's cost information to confirm cost details. Full transparency of cost information is needed for benchmarking to function properly.

**Market Testing**

The term market testing means the re-tendering on the market by the contractor of the relevant sub-contractor's soft service to test the value for money of that service. Any increase or decrease in the cost of such service as a result of market testing

requirements in the contract which result in the replacement of a sub-contractor should be reflected by an adjustment in the price charged to the authority calculated on an agreed cost-sharing basis. The procedure for market testing would be as follows:

- On certain fixed dates, following a failure to agree the outcome of a benchmarking exercise, the contractor retenders the relevant project document and conducts a competition for potential replacement sub-contractors (the existing sub-contractor is allowed to bid);
- If the competition shows that the contractor can obtain better value for money, then the unitary charge must be reduced with the result that the contractor could therefore obtain a reduction in price by appointing a replacement sub-contractor in order to minimise its costs; and
- If the competition shows that the contractor's current sub-contractor is cheaper and better value for money than any potential replacement, then the sub-contractor should continue with an increase in price to the extent this follows the agreed sharing principles.

**ASSIGNMNET**

Over the course of a long term contract, the identity of the authority, the contractor or its financers may change to some extent.

**Restrictions on the Contractor**

The contract does not allow the contractor to assign, novate or transfer its rights under the contract, except as part of its senior lender's security package. If a replacement contractor is appointed by the senior leaders in accordance with their rights under the direct agreement, the contract allows for the original contractor's rights and obligations to be transferred.

**Restrictions on the Public Authority**

The contract does not allow the public authority to assign or transfer its rights or obligations under the contract without the consent of the contractor. The main exceptions are where transfer either takes place under statute or is required to facilitate a public sector reorganisation. The public authority should recognise that financiers are concerned to ensure that any transferee's covenant is as strong as that of the original public authority. If this is not the case, appropriate credit enhancement (e.g. in the form of guarantee) may be required so that the contractor's position is not prejudiced.

**Restrictions on the Senior Lenders**

The authority should not attempt to put restrictions on the identity of the senior lenders unless exceptional circumstances apply. The appropriate way to deal with confidentiality issues is to impose confidentiality obligations in either the contract as

against the contractor and the direct agreement as against the senior lenders. Restrictions are often more cosmetic than real, as they can usually be circumvented through assignment or sub-participation and so reliance should not be placed on such arrangements being effective or meeting the authority's concerns.

Where projects are financed by bond issues, it is likely to be particularly difficult to identify the bondholders at any one time. The public authority should not seek to impose or rely on any restrictions on such senior lenders either. Where bonds are privately placed and the public authority can justify imposing restrictions on financiers, a similar approach may be adopted.

## CHANGE OF OWNERSHIP

The public authority is concerned about changes in the contractor's shareholders, particularly where such changes lead to a change in ownership which gives cause for concern for particular agreed reasons. As a general rule, it should not be necessary for the contract to contain other restrictions on the transferability of equity other than a need to inform the public authority.

### Public Authority's Concerns

Imposing a restriction on the shareholders' ability to transfer their interests in the contractor is partly to prevent any party the public authority views as unsuitable and partly because the public authority takes comfort from the original shareholders' continuing to retain their stake in the project. There is no reason to prevent transfers of equity at least following the service commencement, provided that any such deferred equity commitments are fully supported and a substantially similar overall package is available from the proposed shareholder. It is not unreasonable for the authority to restrict equity transfers by the construction sub-contractors until service commencement or by the operating sub-contractor until service delivery is established.

### Shareholders' Concerns

Holders of shares in contractors do not want their ability to transfer their investment to be restricted. Allowing transferring their investments in contractors extends the availability of capital for projects, makes the market more liquid and can help improve value for money.

The risk exposure of the contractor also changes over time as most risks are concentrated in the period prior to service commencement. The optimal financing structure can therefore be expected to change over time to reflect this. Changes in the financing structure (e.g. through a refinancing) will allow it to reduce its costs and achieve its desired return.

## TERMINATION


A contract will terminate either on the expiry date or as a result of early termination. Early termination can be caused by the public authority default, contractor default, force majeure and corrupt gifts. It can also be caused by the authority exercising a right to terminate the contract voluntarily.

### Treatment of Assets on Expiry of Service Period

The public authority's long-term objectives will be best served by requiring either automatic transfer of the assets to itself on expiry of the contract or at a minimum an option to purchase the assets at nominal cost. The contract protects the public authority's interest by not restricting the options exercisable at or immediately before the end of the contract. These may include:

- Taking possession of any assets at no cost;
- Retendering the provision of the service, with the outgoing contractor making any assets available to the new contractor at no cost; and
- Removing any assets.

In many cases in which the public authority retains assets at no cost, the public authority should consider the extent to which it should have recourse to the contractor if the condition of the assets reveals that the contractor has not carried out all its contractual obligations. This would not be necessary if such assets had reached the end of their useful economic life.

### Preserving the Conditions of the Assets on Expiry

Terminal payments at the end of the contract can be used as a means of incentivising the contractor to maintain high standards of service throughout the service period. If there is a terminal payment, then the contractor will ensure high service standards are maintained to the end. Another means would be to structure the contract to give the public authority an option to enter a secondary contract period with the initial contractor.

### Handover Provisions for Assets which transfer to the Public Authority

The contract needs to set out the provisions dealing with the transfer of the assets:

- The condition of the assets, any rectification works, their cost and how they are paid for;
- Any design life requirement after the expiry date;
- Inspection prior to handover;
- Checking for rectification works have been done;
- Provision for any assignment of warranties, contracts and other rights relating to the project;
- Any disputes in connection with the above.

The contractor should take all reasonable steps and co-operate fully with the public authority and any successor contractor so that any continuation in the service is achieved with the minimum of disruption and so as to prevent or mitigate any inconvenience or risk to health or safety of the employees of the public authority and the public.

**TERMINATION ON CONTRACTOR DEFAULT**

The contract specifies the events of contractor's default which may lead to termination.

- A breach by the contractor of any its obligations which materially and adversely affects the performance of the service;
- A persistent breach occurs;
- The contractor will be wound up or a resolution for a voluntary winding-up of the contractor is passed;
- A failure to achieve the service commencement date by the specified date;
- A breach of some clauses such as assignment, change of ownership, etc.

The contract includes a warning procedure which provides that the contractor is served a formal preliminary notice that a certain type of breach has been persistently occurring during the service period. If such breach continues to occur persistently in, say 12 months following such notice, a final notice is served warning the contractor that any further single occurrence of such breach in, say, the following 6 months will entitle the public authority to terminate the contract. This gives the contractor the opportunity to remedy.

**Compensation on Termination for Contractor's Default**

Under a typical service contract, not only would no compensation be paid, but the non-performing party could expect the innocent party to bring claims for damages. The reason why compensation is paid to the contractor is that the public authority would gain an unfair benefit without paying compensation. This would be the case where a particular asset is developed to deliver a particular service and the public authority is entitled to have the asset transferred to it on a termination without compensating the contractor for its value.

The amount of compensation payable on contractor's default can be based on the market value approach which represents a balance between protecting the public authority's interests and not imposing unreasonable deductions on the contractor for its default. The senior lenders are given an opportunity under the direct agreement to step-in and rescue the project. Senior lenders take the risk of the contractor's performance and take responsibility for the project if the public authority elects to terminate the contract for poor performance.

## SURVEYS ON EXPIRY AND TERMINATION

If the assets are transferred to the public authority at no cost on the expiry date, the contract will specify the conditions. It will also specify the arrangements for a condition survey to assess whether such standards have been met. The costs of the final survey are normally borne by the authority subject to recovery from the contractor where the survey finds that rectification work is needed. The survey is usually carried out by an independent party one year before the end of the contract. The public authority pays a certain proportion of each unitary charge during the last few years of the contract into a secured retention fund to ensure that it can call on sufficient funds to carry out any maintenance. An alternative is for the contractor to procure a performance bond or alternative security in respect of the hand-back condition of the assets.

## AUTHORITY STEP-IN

The public authority may wish to take action if there is a need to prevent or mitigate a serious risk to health, safety or the environment to discharge a statutory duty. Such a right may arise due to matters outside the scope of the work of the contractor or may arise due to the contractor being in breach of certain of its obligations under the contract.

### Step-in without Contractor Breach

If there has been no breach, the public authority will notify the contractor that it plans to step-in and the extent of such step-in. During its step-in, the public authority will pay for the service as if the service had been fully performed. Payment will be conditional upon the contractor agreeing to provide reasonable assistance to the public authority.

### Step-in on Contractor Breach

If the contractor is in breach of an obligation, the public authority will notify the contractor of such breach. This will generally occur through the monitoring arrangement and it is then up to the contractor to rectify the breach within the agreed timetable. If the breach gives rise to a need for the public authority to step-in, the public authority will carry out such rectification itself at the contractor’s expense.

# CHAPTER 7

# FUNDING FOR PPP PROJECTS

## SORUCES OF FUNDING

The first step in determining the funding behind a PPP scheme is the financing structure. The most common structure is to set up a single-purpose project company called Special Purpose Vehicle (SPV) which is used to design, build and operate the PPP project. The shares in the SPV are owned by the project sponsors who enter into a shareholder or joint venture agreement among themselves governing their rights, obligations and liabilities as shareholders. The SPV, as the borrower, enters into a loan/credit agreement with banks which finance the PPP project. The SPV provides the senior lenders the maximum security available over the assets of the PPP project. There may be an inter-creditor agreement between creditors. The remaining funding is provided by the shareholders by way of equity and subordinated debt. The project sponsors usually guarantee the loans under full or limited guarantees during the high-risk construction stage. Figure 7.1 shows a typical financing structure to an SPV:

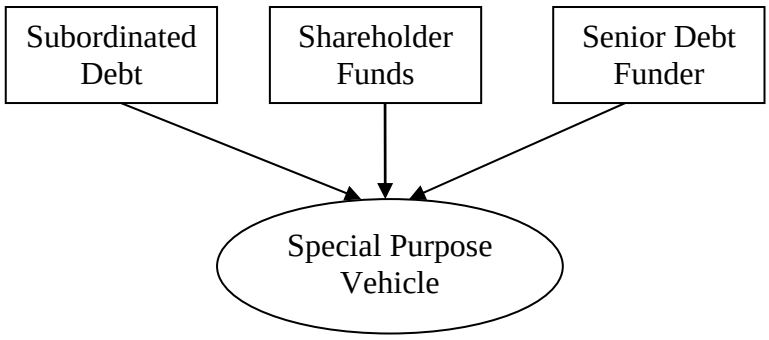



Figure 7.1: Financing Structure for a PPP

As shown in Figure 7.1, the two main sources of finance are equity and debt. Equity is an investment from shareholders of the SPV. It is usually invested in the form of shareholder funds and subordinated debt. For well-established large project sponsors, they can raise the required equity in capital markets. The funds will be repaid to the shareholders both during the concession (subordinated debt) and at the end of the

concession (shareholder funds). Equity bears the highest risk and thus expects the highest return.

Senior debt is the remaining source of funds and usually constitutes the largest portion of the funding. Senior debt is not subordinated to any other liability and is paid out first if the SPV is under liquidation. This source of funds is less risk due to its higher security over subordinated debt and share capital. It is thus cheaper than equity in terms of cost of capital. In order to reduce the overall risk, the project sponsors generally try to provide the least possible amount of equity, whilst meeting the requirements of senior lenders.

## EQUITY CONTRIBUTIONS

It is unusual that senior lenders provide 100 per cent funding for a PPP project. The shareholders must inject some funds into the SPV as well. The early PPP deals see this equity coming from the construction contractors and operating companies involved in the PPP project. Whilst these parties are still investing equity in projects, there have been an increasing number of independent funds investing into PPP projects. Equity is typically contributed by shareholders by way of share capital and subordinated debt.

### Equity

Equity (or share capital) is issued to set up the SPV which designs, builds and operates the facilities for the public sector client. The shareholders are typically the project sponsors, though other investors may take an equity stake in the SPV, including the public sector client in a joint venture type structure. The amount of funding from pure equity is determined by a number of factors:

- Market risk – the amount of senior debt that can be borrowed from banks is dependent on the robustness of cash flows generated from the project. If the project revenue is exposed to market fluctuations, its cash flow is less robust and can support a lower level of debt funding. The portion of senior debt then determines the remaining amount of equity funding required from shareholders.
- Cost of capital – due to the unsecured nature of returns, equity is the most expensive form of capital and has an impact on the overall cost of capital.
- Minimum equity contribution – senior lenders often require a minimum level of equity contribution from shareholders to demonstrate their commitment to the project.
- Tax implications – interest payments paid to senior lenders and subordinated debt providers are tax deductible. Return to pure equity is paid from profits after tax.

Equity is usually committed at the commencement of the project. The returns to shareholders are in the form of dividends which are normally received much later in the project. According to usual accounting rules, dividends can only be paid once the SPV has made an accounting profit. In an asset based financing structure where the

costly asset built is depreciated over the concession, the SPV usually incurs accounting losses for the first few years before it can make any dividend payments. However, there should be remaining cash for making any dividend payments after paying other parties. A tightly financed project may pay out the majority of dividends when the senior debt is repaid. Therefore, equity is the most expensive form of capital because it is the lowest ranking in seniority of payments.

**Subordinated Debt**

The shareholders' capital is usually provided in the form of subordinated or junior debt. Subordinated debt can be secured. It is junior to the senior debt, but senior to equity capital and unsecured creditors. By using subordinated debt, the equity required by the shareholders can be substantially reduced. The higher security offered to subordinated lenders over equity shareholders can thus reduce the financing costs of the project.

The subordinated debt may be provided by the same equity shareholders in the SPV or specialist investment funds. The subordinated lenders enter into a separate loan agreement with the SPV that describes the terms and conditions of the loan. Inter-creditor agreements are also drawn up setting out how this type of financing is subordinated to the rights of the senior debt providers.

Subordinated debt is usually injected into the SPV at the commencement of the project as with the share capital. Sometimes, it may be invested at intervals over the construction period or at the end of construction period.

Subordinated lenders receive their return by way of an interest payment based on a fixed or floating rate on the outstanding subordinated debt. Although subordinated debt is subordinated to senior debt in terms of cash flow priority, the interest demanded by the subordinated lenders is usually higher.

Subordinated debt can be repaid in a number of fashions. It is usually amortised over the length of the concession, and is repaid based on the bespoke cash flow profile during the project or as a bullet repayment at the end of the concession.

**DEBT FINANCING**

Debt financing is the main source of funding for PPP projects. Nowadays the banking market can provide a highly geared long-term finance for a project. Senior debt can constitute up to 70% - 90% of the financing required for a particular PPP project. More aggressive debt structures give a greater risk in cases of default or termination. Therefore there should be a balance between meeting affordability and ensuring a robust SPV.

Debt financing offers distinct advantages for funding PPP transactions mainly due to different risk and return profiles over equity holders. These advantages include:

- Debt is a cheaper source of funding than equity as it has priority over equity holders for repayment, i.e. it holds a far stronger security position.
- Unlike the return on equity that is usually paid as dividends out of profits after tax, the interest on senior debt is paid out of pre-tax operating revenues.
- The amortised debt repayments profile by the fixed interest margin brings certainly to cash flow profiles for the SPV.

The drawdown of senior debt usually takes place during the construction period. Interest accrued on debt is typically rolled-up until the SPV is able to start repaying the debt from the project revenue. Once the construction phase is complete and repayment has commenced, further drawdown is not permitted.

Repayment can be calculated in many ways. The most common method of repayment is in accordance with a repayment schedule. The amount paid can be based on equal monthly rates, a percentage of the project's cash flow, a percentage of the project's revenue for output or a rate per unit of output.

Senior lenders usually require the revenue generated from the project to be funnelled through some control accounts which provide senior lenders with security over such funds and to control the cash flow waterfall.

## FINANCIAL VIABILITY

In project financing, it is the health of the project structure, the commercial plan and the forecasted revenue stream that convince senior lenders to provide financing. The project assets which are under construction stage are usually insufficient in value to satisfy the outstanding project debt. A project is financially viable where the project revenue stream less costs, expenses and fees leaves an appropriate rate of return on investment for the shareholders and debt service coverage for the senior lenders.

### Debt-to-Equity Ratio

The shareholders are eager to use the cheapest sources of funding to finance their PPP project so as to offer the lowest price to the public sector client. The debt-to-equity ratio is used to compare the amount of debt in the project against the amount of equity invested. Higher debt-to-equity ratios mean increased senior lenders' exposure to project risk. Higher equity investment results in a greater ownership of the project by shareholders, increasing their incentive to ensure the success of the project. Generally, the more risk inherent in a PPP project, the more risk senior lenders wish to see shareholders take and hence the lower the debt-to-equity ratio.

**Debt Service Cover Ratio**

The debt service cover ratio (DSCR) is used to determine the extent to which the SPV can meet a scheduled debt repayment from its available cash flow. This ratio is calculated by dividing the cash flow available for debt service by the scheduled debt repayment over a certain period, usually 12 months. Senior lenders demand a minimum DSCR to be met throughout the project life. If, at the time of measuring the DSCR, the forecasted revenues cannot be realised and the DSCR ratio is lower than the threshold stated in the credit agreement, certain events will be triggered.

The minimum DSCR for a PPP project with no market risk are around 1.15 – 1.20, i.e. there is a 15% - 20% buffer of available cash over and above that required to service debt. With increased risk in projects, the senior lenders will require a higher minimum DSCR.

**Loan Life Cover Ratio**

The loan life cover ratio (LLCR) is to determine whether the cash available over the remaining life of the loan is sufficient to repay the debt outstanding. This ratio is calculated by dividing the net present value of the cash available for debt service over the remaining life of the loan by the outstanding debt balance at the time of calculation. The discount rate used to derive the present value is the total interest rate applied to the senior debt. It is therefore a forward looking ratio based on forecasted revenues and costs, as opposed to the DSCR which is predominantly a historic measurement based on actual performance. For a PPP scheme with no market risk, the minimum LLCR required is normally around 1.25 – 1.30.

**Rate of Return**

The equity rate of return indicates the value of project return on equity over time and against other cost considerations. The shareholders may also be receiving benefit from other areas of the project such as the construction and operation tasks which do not appear in the equity rate of return.

**HEDGING**

Commercial banks are not normally in a position to lend long-term funds at a fixed interest rate. On the other hand, an SPV may not be willing to take the risk of interest rate fluctuations, particularly if their income source from the public sector client is fixed. Therefore, hedging plays a key role in PPP projects to mitigate the risk of interest rate exposure to the SPV. By taking out an interest rate derivative, the SPV is able to satisfy the senior lenders' requirement for the interest charge calculated on a floating rate basis, while providing certainty to SPV cash flows.

**Interest Rate Swaps**

An interest rate swap enables the SPV to raise funds on a floating basis and subsequently convert the interest basis to a fixed rate. It is an exchange of interest payment obligations between two borrowers without the exchange of the related principal repayment obligations.

Typically, an SPV will have a floating rate obligation to the senior lender. By having an interest rate swap in place, the SPV will accept a payment from swap counter-party approximately equivalent to the floating rate interest on its debt. In return, it will pay to the counter-party the fixed interest costs on an equal amount of debt. Only payments calculated by reference to floating and/or fixed rate interest rates are exchanged, no principal changes hands. There are various types of interest rate swaps available to an SPV; namely vanilla swap, interest rate cap/collar, swaption and flexi-swap.

**Vanilla Swaps**

An interest rate swap allows for the interest rate applied to the senior debt to be fixed for a period of time. The swap is a commitment to a specific drawdown and repayment profile for the debt, and would correspond to those forecasted in the financial mode. If the timings of drawdowns and repayments differ, the swap needs to be broken and reset. Swap breakage costs would be incurred.

**Interest Rate Caps/Collars**

An interest rate cap/collar arrangement provides a more flexible approach to dealing with interest rate risk than a swap because it provides the SPV with protection against future interest rate increase above the capped rate (the Cap Strike). There are a number of options; namely, interest rate cap only, collars at varying premia and zero cost collar.

A cap will allow interest rates to rise to a pre-determined level. Below this capped rate, the SPV take the benefit on varying interest rates. Once this interest rate is passed, the counter-party will pay the SPV the difference between the interest payment under the prevailing market rate and that at the cap.

A collar can be used in conjunction with a cap and set a lower interest rate boundary. Should prevailing market interest rates be below that of the collar, the SPV would pay the counter-party the difference in interest between the lower rate (the Floor Strike) and the prevailing rate.

A premium is paid upfront for the cap/collar, depending on the rate and perceived volatility in rates over the period of the cap. Opting for a collar arrangement will tend to reduce the premium paid up front.

Using a zero cost collar, the floor and ceiling are set so as to yield a zero premium. Based on this premise, it is possible to define the premium that the SPV is willing to pay and accept the extent of the cap and collar and vice versa.

**Swaption**

The SPV would buy, with an up-front premium, a payers swaption exercisable on the scheduled commencement date of the swap (the loan drawdown date). This buys the right to pay a fixed rate (strike price) on the national swap profile as per a normal vanilla swap. If a delay to the drawdown on the debt occurs, then the right to buy the swap would lapse. The advantages are:

- Allows a degree of choice in that if the swap is not required, the option needs not to be taken up.
- Cost of the option is limited to the premium with no further breakage costs. Therefore, shareholder risk is capped prior to exercising the swap.
- The option needs only to be taken up if there are advantages to the SPV. Regardless of delay to the construction timetable, if the market rate is in excess of the strike price at the time of the option, it could be financially advantageous to exercise the option and break the swap with potential re-imbursement of the premium.

However, the flexibility is limited to the choice of exercising or not exercising the option, and not the timing of the option. If the option is not exercised through delays, the interest rate will need to be re-fixed, presumably using a straightforward vanilla swap. While there would not be a premium, should rates have increased materially during the intervening period, this could jeopardize shareholders' return without a change mechanism being in place.

**Flexi-swap**

A flexi-swap allows for a greater degree of flexibility in the use of a swap than those options discussed above. Flexi-swap allows for a delay in the commencement of the swap, with amortisation increased once the total amount is reached so that the swap matures on the scheduled termination date.

It is also possible to buy a flexi-swap that allows deviations in drawdown profile and repayment profile. For a rate higher than the vanilla swap, it is possible to build flexibility into the drawdown profile and into the repayment profile. This allows for a higher degree of flexibility than previous options, reducing the likelihood of breaking the swap and incurring potential costs. However, it is the most expensive of the options.

**Inflation Swaps**

Within PPP schemes, revenues are commonly linked to the Retail Price Index (RPI). There are two types of RPI swaps appropriate for PPP projects: income swap and real rate swap.

**RPI Income Swap**

An RPI income swap can be used to swap unknown increases in an income stream which are contractually linked to RPI for known fixed increases. This provides certainly to the income received over the long-term concession period. The greater the proportion of unitary charge that is linked to RPI, the greater the desire SPVs take out this type of derivative product.

The diagram below describes the arrangements for a RPI income swap when combined with a vanilla interest rate swap described above:

The example illustrated above has allowed the SPV to quantify their income stream so that the loan repayment obligations are covered. By replacing the project's variable income with a known income flow, it has protected the downside risks, but also taken away any potential upside. The interest rate swap fixes the SPVs interest cost and by combining both hedging products, the SPV can increase certainly over their cash flows and hence profits.

**Real Rate Swap**

A real rate swap is similar to a vanilla interest rate swap. The payment is split into a fixed rate (or real rate) plus a variable rate, where the variable element is a periodic change in RPI.

Nominal interest rates can be split into real and inflation-linked components. Historic analysis shows that the real element is negatively correlated to economic growth, whereas the inflation component is positively correlated. By fixing the real rate of interest and keeping the inflation element floating, the SPV can hedge the specific exposure (i.e. to real rates) and retain the desired exposure to RPI. The diagram below illustrates this type of hedging arrangement:

This arrangement can result in a more cost effective hedge than either totally fixing the cost of debt or leaving it un-hedged, although RPI income swaps tend to be more favoured.

**LOAN/CREDIT AGREEMENT**

The loan/credit agreement is an important document between the SPV as borrower and the banks as senior lenders. Since there is usually a limited recourse offered, senior lenders will insist on a greater degree of control over the SPV through a number of contractual mechanisms set out in the credit agreement.

**Conditions Precedent**

Senior lenders usually specify a number of criteria that must be met before lending money to the SPV. These conditions will include general conditions and those prior to each drawdown.

- Documents – certificates of the directors of the SPV, finance documents and certified copy of each project document duly executed.
- Reports – a report of the senior lenders' technical advisor.
- Insurances – certificate from the senior lenders' insurance advisor and report from the brokers certifying that all necessary insurances are in full force and effect. A report on the insurances from the senior lenders' insurance advisor.
- Insurances – certificate from the senior lenders' insurance advisor and report from the brokers certifying that all necessary insurances are in full force and effect. A report on the insurances from the senior lenders' insurance advisor.
- Financial models – that the financial model meets all minimum requirements for debt service and loan life cover ratios. A report from the senior lenders' model auditor confirming that the financial model and assumptions have been audited.
- Security – share certificates for the whole of the insured share capital of the SPV duly executed.
- Appointments – appointment of the senior lenders' technical advisor and insurance advisor for a certain period post financial close.
- Equity Contributions – evidence that the SPV has received the expected amount of equity subscription (both share capital and subordinated debt).
- Project Accounts – evidence that each project account has been opened.

**Drawdown Procedures**

Drawdown from the loan facility is normally limited to the projected construction completion date plus a specified grace period. Loan proceeds are made available through the agent bank and credited to a project revenue account held by the SPV to which it can then pay out to contractors, etc.

**Interest**

The SPV will pay interest on the outstanding loan at the interbank offered rate plus the specified margin payable on the last day of each interest period. The margins represent the return to the bank for providing the debt. A specific margin will be requested during the availability period, which is usually greater (representing a greater level of risk) than during the repayment period. The margins are a good indication of the level of risk the bank associates with the project.

**Fees**

There are two main fees that banks charge to the borrower. An upfront or arrangement fee payable at financial close is required to compensate the senior lender for arranging the loan. Upfront fees are usually expressed as a percentage of the total size of the debt facility arranged.

Once senior lenders have committed funds to finance the scheme, it has lost the ability to use these funds elsewhere to earn a return. As such, senior lenders will charge a commitment fee to the borrower for making available these funds. Once the borrower has drawn down funds from the debt facility, those funds stop accruing commitment fees and start accruing interest.

As mentioned above, arrangement fees are paid to the bank at financial close, but essentially paid for out of the debt facility. The total amount drawn down from the facility, plus the commitment fees and capitalised interest are summed at the end of the availability period into the total debt outstanding. This debt is then amortised over the remaining period of the tenor such that all of the facility is repaid by the end.

**Representations and Warranties**

A representation is a statement by an SPV to senior lenders about a particular fact that is correct on the date when made. A representation is made about either a past or present fact. A warranty is sometimes confused with a representation, but in practice the two terms are used together, the senior lenders typically require the SPV to represent and warrant the same fact. The untruth of any representation or warranty is an event of default under the credit agreement. This enables the banks to exercise leverage over the SPV without necessarily having to initiate litigation. Examples of which includes:

- Status - the SPV is a limited company which has the power to carry on the business it proposes to conduct and to own its assets.
- Powers and Authority - the SPV has power to execute, deliver and perform its obligations under the relevant documents to which it is a party to carry out the transactions contemplated by those documents.
- Binding obligations - the SPV's obligations under the relevant documents to which it is a party constitute its legal, valid and binding obligations.
- Contraventions - the execution, delivery and performance by the SPV of the relevant documents to which it is a party will not contravene any applicable law; conflict with any of the terms of any agreement to which it is a party; or contravene or conflict with its memorandum or articles of association.
- Insolvency - the SPV has not taken any action nor have any steps been taken or legal proceedings been started or threatened.
- No default - the SPV is not in breach of any of its obligations under the project agreement.
- Litigation - no action, litigation, arbitration or administrative proceeding has been commenced, or is pending or threatened, against the SPV.
- Consents - all consents that have been obtained or effected are in full force and effect.

**Cover Ratios**

Senior lenders are concerned with the SPV's ability to raise revenue sufficient to repay its debt obligations. Maintaining certain financial ratios will be a requirement

of the credit agreement and essentially relate to the operational phase of the project during which debt is scheduled to be repaid. The key cover ratios usually required by senior lenders in PPP projects are the Debt Service Cover Ratio (DSCR) and the Loan Life Cover Ratio (LLCR) as discussed above. Usually, a bank will specify a level for the DSCR and/or LLCR before any dividend distributions. Additionally, a minimum level of DSCR and/or LLCR can be specified as an event of default under the credit agreement.

**Project Accounts**

The SPV is usually required to open and maintain a number of project accounts for different purposes. Such accounts typically gather all payments to the SPV and enable the senior lenders to exercise control over payments from the account. Some project control accounts are:

- Equity Account is to receive the proceeds of shareholders equity subscriptions or subordinated loans. The SPV may draw on this account only to pay the specified capital costs or to repay the loans and interest.
- Disbursement Account is to receive the proceeds of the loans. The SPV may draw on this account for the approved project purposes such as the construction cost.
- Proceeds Account is to receive all revenues from the project. The SPV may draw on this account only to pay in the following costs in the following order of priority:
  - Project operating costs and project taxes
  - Any agreed capital costs
  - Scheduled loan repayments and loan interest and other servicing amounts
  - Specified amounts to the loan reserve account to provide a cushion for future loan payments
  - Specified amounts to the maintenance reserve account to produce moneys to maintain the project
  - Any prepayments of an individual bank under the taxes, increased costs or illegality clauses
  - Dividends or interest to the borrower’s shareholders or any other purpose but only if (1) paid during a period of 30 days after a repayment date, (2) the cover ratios are met, and (3) there is no event of default.
- Debt Service Reserve Account is to create a reserve fund which is used to make interest and principal repayments should the project cash flow exhibit unforeseen adverse variations.
- Maintenance Reserve Account is to build up a reserve to cater to cyclical maintenance of the project. Senior lenders would seek to ensure that funds be set aside from ongoing operations in order to be able to service the PPP project at given intervals.

**Undertakings**

The SPV will have to provide the banks financial information, documentation circulated to creditors and shareholders, information relating to defaults, litigation,

security, any other occurrence likely to have a material adverse effect on it and any other information reasonably requested by the banks. Other undertakings will include:

- Pre-completion date reports setting out construction work to date and key milestones met. Post-completion reports setting out project revenues and costs within the payment period.
- Details of all compensation, relevant liquidated damages and insurance proceeds.
- Occurrences of events of force majeure.
- Gaining majority approval for share transfers, expenditure over budgets, restrictions on dividends among others.

**Events of Default**

Events of default are those events, which, should they occur, permit the senior lender to require all amounts outstanding to become immediately payable. Typical events of default will include:

- Payment - no-payment of interest or principal constitutes an event of default.
- Breach of Covenants - a breach of one of the covenants is an event of default. The senior lenders can then assess the defaults on a case by case basis, and decide whether they are remediable or whether they warrant intervention or restructuring.
- Breaches of Representations or Warranties - a breach of a representation or warranty set forth in the credit agreement also constitutes an event of default. It is up to the banks to determine whether such a breach poses a serious threat to the project's viability.
- Final Acceptance Date - if the project completion date, typically called the final acceptance date or long-stop date, does not occur by a certain date based on the agreed construction schedule. This can be considered an event of default.
- Government Approvals - failing to obtain, maintain and renew government approvals or consents can also be considered an event of default. The borrower will naturally seek to limit the coverage of any such events of default to events that threaten the viability of the project or ability to perform its obligations under the credit agreement.
- Cover Ratios - if the specified minimum cover ratios cannot be met, this can be considered an event of default.
- Abandonment - abandonment of the project by the SPV is an event of default.
- Ownership and Control - failure of the project sponsors to maintain either an agreed-upon ownership interest or voting control of the SPV is an event of default. The purpose of this clause is to ensure that the original equity investors remain committed to the project, maintaining the original risk profile.
- Breach of Credit Support - if any party to a credit support document is not paid when due, this will constitute an event of default. Providers of subordinated debt and parties obligated to make capital contributions are included in the scope of this default.
- Security Documents - if any security document ceases to be in full force, or is no longer effective to create a first priority lien on the collateral, then an event of default occurs.

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