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CONSTRUCTION PROCUREMENT

BEST PRACTICE GUIDELINE #A5

Managing construction procurement risks

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1. Introduction

Risk cannot be eradicated, but can be managed; it is better to be proactive rather than reactive. Risks, however, need to be identified, quantified and understood if they are to be managed.

Risk management is an iterative process consisting of well-defined steps which, taken in sequence, support better decision-making by contributing a greater insight into risks and their impacts. The risk management process can be applied to any situation where an undesired or unexpected outcome could be significant or where opportunities are identified. Decision makers need to know about possible outcomes and take steps to control their impact.

Risk management is recognized as an integral part of good management practice. To be most effective, risk management should become part of an organization's culture. It should be integrated into the organization's philosophy, practices and business plans rather than be viewed or practiced as a separate program. When this is achieved, risk management becomes the business of everyone in the organization.

Risk management enables continual improvement in decision-making. It is as much about identifying opportunities as avoiding or mitigating losses.

2. The approach to risk management advocated in AS/NZ 4360: Risk Management

The Australian / New Zealand standard AS/NZ 4360 (1999): Risk Management provides a generic framework for establishing the context, identification, analysis, evaluation, treatment, monitoring and communication of risk. An understanding of this standard is essential if risk is to be managed.

AS/NZ 4360 contains the following definitions:

> **monitor:** to check, supervise, observe critically, or record the progress of an activity, action or system on a regular basis in order to identify change.
>
> **risk:** the chance of something happening that will have an impact upon objectives.
>
> **risk acceptance:** an informed decision to accept the consequences and the likelihood of a particular risk.
>
> **risk avoidance:** an informed decision not to become involved in a risk situation.

risk control: the part of risk management which involves the implementation of policies, standards, procedures and physical changes to eliminate or minimise adverse risks.

risk management: the logical method of establishing the context, identifying, analyzing, evaluating, treating, monitoring and communicating risk associated with any activity, function or process in a way that will enable **losses** to be minimised and **opportunities** to be maximised.

risk transfer: shifting the responsibility or burden of loss to another party through legislation, contract, insurance or other means or shifting a physical risk or part thereof elsewhere.

The main elements of the risk management process are as shown in Figure 1 and tabulated in Table 1.

Table 1: The main elements of the risk management process

Element		Consideration
1	Establish the context	Establish the strategic, organizational and risk management context in which the rest of the process will take place. Criteria against which risk will be evaluated should be established and the structure of the analysis defined.
2	Identify risks	Identify what, why and how things can arise as the basis for further analysis.
3	Analyse risks	Determine the existing controls and analyse risks in terms of consequence and likelihood in the context of those controls. The analysis should consider the range of potential consequences and how likely those consequences are to occur. Consequence and likelihood may be combined to produce an estimated level of risk.
4	Evaluate risks	Compare estimated levels of risk against the pre-established criteria. This enables risks to be ranked so as to identify management priorities. If the levels of risk established are low, then risks may fall into an acceptable category and treatment may not be required.
5	Treat risks	Accept and monitor low-priority risks. For other risks, develop and implement a specific management plan which includes consideration of funding.
6	Monitor and review	Monitor and review the performance of the risk management system and changes which might affect it.
7	Communicate and consult	Communicate and consult with internal and external stakeholders as appropriate at each stage of the risk management process and concerning the process as a whole.

3. Construction related risk

3.1 Introduction

All engineering and construction projects are subject to risks which can affect their successful completion. Risks can influence the delivery of a project with respect to time, cost and quality. The generic sources of risk on such projects include commercial and legal relationships, economic circumstances, human behaviour, natural events, political circumstances, technology and technical issues, management activities and controls and individual activity.

On engineering and construction projects carried out with internal resources, i.e where no work is outsourced, only the organisation requiring the project, for practical purposes, is at risk. However, where construction projects are implemented by contract, a number of parties can be at risk, the principal ones being:

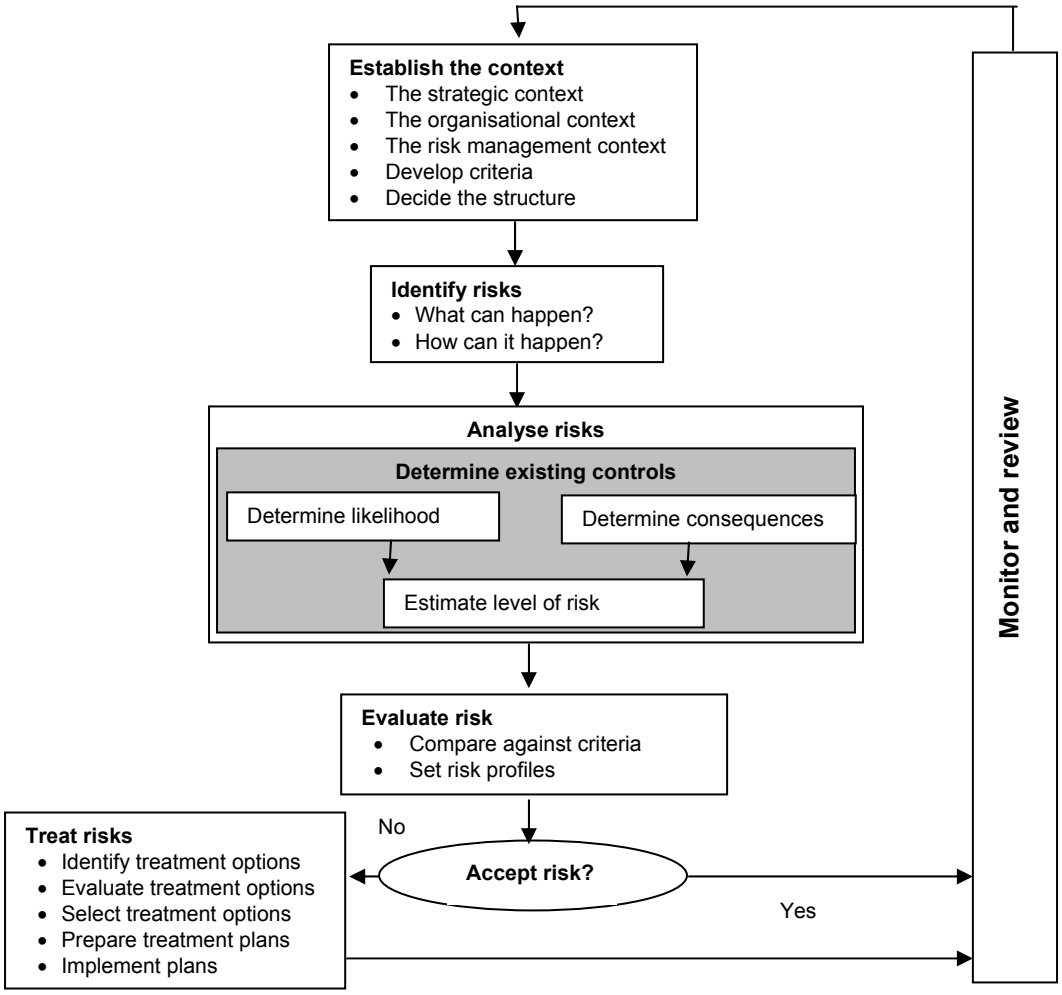


Figure 1: The process associated with establishing and implementing a risk management plan

- the employer
- the contractor (and subcontractors)
- professional service providers

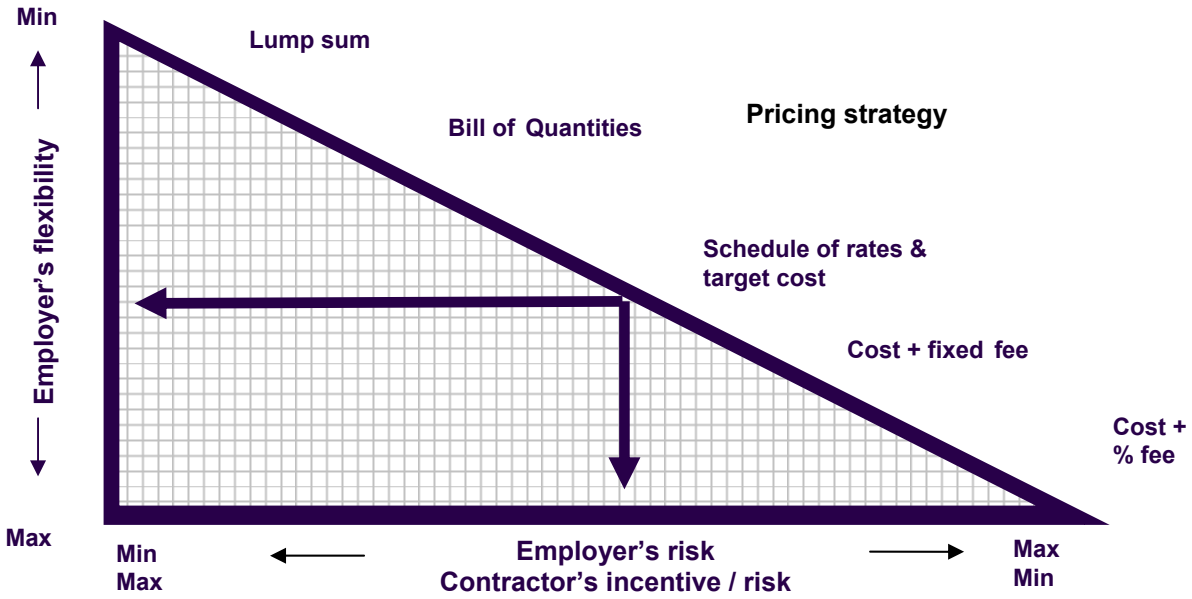
The allocation to the various parties of responsibility for dealing with specific risks is an important aspect of risk management.

3.2 Risk allocation

Ideally, responsibility for indemnifying the consequences of a risk should rest with the party which has control over that risk. In practice, however, it may be preferable that responsibility for a risk is borne by the party best able to manage it.

The sharing of risks and requirements for indemnities, supporting insurance, sureties, retention money etc. should be set out in the contract data. Standard conditions of contract, supplemented by contract specific data, normally perform this function.

The typical allocations of total risk between the two main parties, the employer and the contractor, on the commonly encountered contracting and pricing strategies are illustrated in Figure 2.



Contracting strategy				
Design and build	Develop and construct	Design by employer	Management contract	Construction Management

Construction Management	Similar to a management contract, the main difference being that the trade contracts are between the Employer and the various trade contractors.
Design and Build	The Contractor undertakes most of the design and all construction in accordance with the Employer's brief and a his detailed tender submission, usually for a lump sum price.
Develop and Construct	Similar to design and build, except that the Employer issues a concept design on which tenders are based.
Design by Employer	The Contractor undertakes only construction on the basis of full designs issued by the Employer.
Management Contract	A management contractor is appointed to engage and manage a number of trade contractors to carry out construction on the basis of designs issued by the Employer, as and when they are completed. The trade contracts are between the management contractor and the various trade contractors.

Figure 2: Trade offs and trends in the allocation of risk in engineering and construction contracts

It can be seen in Figure 2 that the contractor's incentive is related to his risk exposure. On the other hand, the employer's flexibility is related to his risk exposure. The greater the risk borne by the employer, the less certain is the cost of a project. However, the greater the risk borne by the contractor the greater is the probability of higher tender prices being received. Thus, the choice of contracting and pricing strategy permits the employer to pass risk onto the contractor in exchange for a cost premium, but with greater certainty of out-turns cost. Conversely, the less risk passed onto a contractor, the greater the likelihood of an economical out-turn cost.

Many unforeseen conditions, or unexpected events, may cause cost increases and the employer may, also, have unrealistic expectations regarding time and cost of construction, which may force contractors into unrealistic gambles, improvident corner-cutting, or commitments that may be unrealistic.

The construction industry is fiercely competitive in nature. Frequently, disputes arise over the rights and obligations of the parties, particularly where unexpected risk, which results in financial loss, is experienced. In such instances, relationships become adversarial and, often, energies are directed towards objectives other than getting the project completed to the correct quality, on time and within budget. The misallocation and misperception of risks can result in the employer paying more than is necessary for projects due to, *inter alia*, tender contingencies and unanticipated involvement in dispute resolution. Improper risk allocation can, also, cause additional costs in the form of delay in gaining use of a facility. Accordingly, particular care needs to be taken when developing contract documents for projects to ensure that risks are carefully and comprehensively allocated to the most appropriate parties.

3.3 Insurance

Most physical risks can be insured against. For example, on engineering and construction works contracts a contractor can have many risks covered by effecting insurances such as Contract Works Insurance, Public Liability Insurances, SASRIA Special Risks Insurance, Removal of Support Insurance, general insurance cover for plant owned or hired by them, and Professional Indemnity Insurance.

Insurance is not a substitute for effective risk management. Insurance is only intended to deal with measurable or known risks and serves to spread the impact of loss. It cannot deal with uncertainty itself and cannot prevent loss.

Most standard forms of engineering and construction contracts require the contractor to effect a range of insurances and to extend such cover to subcontractors. Some require that, in addition, contractors effect specific insurances. Historically, many organs of state, particularly at national and provincial level, have required contractors themselves to effect the relevant insurances. In contrast, many public utilities and local authorities have their own Contractor's All Risk policies and work put out to contract is automatically insured through Principal Controlled Insurance, which may include an element of self insurance. In such cases, contractors are, normally, required to effect only supplementary insurance cover, such as insurance of construction plant and equipment, tools, offices and other temporary structures and contents, insurance in terms of the provisions of the Compensation for Occupational Injuries and Diseases Act of 1993, motor vehicle liability insurance and insurance for the manufacture / fabrication of portions of the works at premises other than the contract site.

There could be benefits to both the employer and emerging contractors / small and micro enterprises should the employer take out Contractors All Risks insurance under which work put out to contract would be automatically insured. In contractor development programmes, insurance excesses can, in some instances, be higher than the profits generated on labour only contracts and could result in insolvency of contractors, unless mechanisms are put in place to assist them in meeting the excesses, where claims have arisen due to unavoidable circumstances.

Forward cover can be taken out to insure against currency fluctuations on imported components.

Risks which are retained by the employer and are not covered by insurance should instead, be covered by reasonable budgetary provisions made in advance.

4. Guidelines for risk management

4.1 General

Since risk cannot be eliminated, but should be managed, it is better to be proactive than reactive. Procurement risk should be identified and assessed on a case by case basis. As a general rule, the aim should be to allocate risks to those best able to manage them provided that the cost of transferring them to that party does not exceed the cost of retaining them. In many cases, this will be the contractor. Transferring a risk to another party might well act as an incentive to that party to improve its performance.

However, forcing a party to accept a risk which it has little chance of managing, is likely to be costly and counter-productive. Where there is doubt about where a risk should lie the deciding factor should be the relative costs of transferring it, or retaining it.

Risk management by the employer should comprise:

- an identification of risks, including possible consequential risks;
- an analysis of risks to determine the probabilities of occurrence and the likely impacts thereof;
- decisions as to how risks are to be allocated and managed through the life of a project to contain them within acceptable limits;
- monitoring and controlling changes in risks; and
- gathering and analysing statistics on the determination / abandonment of contracts, time and cost overruns etc., to enable risks on future contracts to be minimised.

In engineering and construction works contracts, risk management may necessitate the:

- identification of preventative measures to avoid a risk or to reduce its effects;
- proceeding with a project on a stage-by-stage basis whilst initiating further investigation to reduce uncertainty through better information;
- consideration of risk transfer in contracting and pricing strategies, with attention to the motivational effects, and the control of risk allocations;
- consideration of risk transfer to insurers;
- setting and management of risk allowances in cost estimates, programmes and specifications; and
- establishment of contingency plans to deal with risks should they occur.

4.2 Procurement documents

Procurement documents are important tools for managing risks. Their purpose is to determine the consequences of particular risks which have been identified. Contracts should, accordingly, clearly define the respective responsibilities of the parties and be flexible enough to deal with probable changes. The importance of the clear allocation of risk and the management of change cannot be underestimated, particularly in contracts of developmental nature, where third party management support is involved.

Some forms of contract contain procedures which are designed to manage the risk of time and cost overruns. Accordingly, the selection of the appropriate form of contract can form an integral part of the risk management strategy. (See Best Practice Guideline #C2, *Choosing an appropriate form of contract for engineering and construction works*)

Realistic contract periods should be stipulated in contracts.

Contract documents should clearly set out all available data, particularly geotechnical data, to permit the cost and time implications of the project to be assessed as accurately as possible.

4.3 Managing risk in certain types of contracting strategies

The main risks to the employer where the design by employer contracting strategy is utilised in engineering and construction works contracts are set out in the Table 2 in respect of:

- contracts where contractors are assisted by means of third party management support (see SANS 1921-4, *Third party management support in works contracts*, aimed at the use of newly emergent contractors, or fledgling / aspirant contractors; and
- prime, contracts intended for established /conventional contractors.

For contracts of other types, the nature of the risks will be substantially the same, but the management of the risks will vary, depending on the particular circumstances and the contracting strategy which is adopted.

Table 2: Main risks to the employer in engineering and construction contracts where the design by employer contracting strategy is utilised.

Risk to the Employer	Is risk normally insurable?	Usual method of managing risk	
		Development contract with third party management support (See SANS 1921-4)	Prime contracts
Risk of delay from public inquiries, legal formalities, protests by pressure groups, changes in legislation and other third party - influenced activities.	No	Employer retains risk.	
Financial hazards such as statutory wage increases and unduly high inflation	No	Employer retains risk.	
Liability for death, or injury, to employees, third parties and the public at large.	Yes	Employer retains risk and insures.	Employer transfers risk to Contractor and requires him to insure.
Property loss and damage on the works arising from theft, fire, explosion and other unnatural causes.	Yes	Employer retains risk and insures.	Employer retains risk and insures, or transfers risk to Contractor and requires him to insure.
Risk of adverse effects on, or damage to, third party-owned property and buildings resulting from construction activities.	Yes	Employer retains risk and insures.	Employer retains risk and insures, or transfers risk to Contractor and requires him to insure.
Damage and delay to the works resulting from climatic and weather conditions and incidents.	Partly	Employer retains risk and may insure.	Employer transfers risk to Contractor.
Risks associated with ground conditions including variability, unforeseen difficulties, subsidence and earth movements.	No	Employer retains risk.	Employer retains some risk and transfers the balance to the Contractor.
Hazards liable to cause damage to vehicles and plant and related death, injury, or damage to third parties and property.	Yes	Employer retains risk and insures.	Employer transfers risk to Contractor and requires him to insure.
Liability for non-compliance with statutory obligations relating to construction work.	No	Employer transfers risk to Contractor.	
Failure by the Contractor to adhere to the construction programme and/or late completion of the contract.	No	Employer retains risk but may require some penalty from the Contractor.	Employer retains risk but requires a realistic penalty from the Contractor.
Default, or abandonment of the contract by the Contractor, or insolvency of the Contractor.	No	Employer retains risk.	Employer retains risk, but requires Contractor to furnish surety for part of the contract value to be invoked in the event of default.

Poor workmanship by the Contractor resulting in the necessity for repairs and unduly high maintenance, or the presence of latent defects.	No	Employer retains risk but withholds retention money for maintenance over a limited period. Risk can be reduced by requiring professionals to oversee construction works.	Employer retains risk, but withholds retention money for maintenance over a limited period. The possibility of action against the Contractor at a later stage in respect of latent defects is not precluded.
Negligence of Professionals resulting in faulty design and contract documentation, or poor contract supervision and administration.	Yes	Employer transfers risk to Professionals and requires them to insure.	