

CONSTRUCTION MANAGEMENT



THOMAS E UHER & PHILIP DAVENPORT

FUNDAMENTALS OF BUILDING CONTRACT MANAGEMENT



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A UNSW Press book

Published by

University of New South Wales Press Ltd
University of New South Wales
UNSW Sydney NSW 2052
AUSTRALIA
www.unswpress.com.au

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First published 2002

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National Library of Australia
Cataloguing-in-Publication entry:

Uher, Thomas E. (Thomas Edward).
Fundamentals of building contract management.

Bibliography.
Includes index.
ISBN 0 86840 469 1.

1. Construction contracts — Australia — Management. 2. Construction contracts — Management. I. Davenport, Philip. II. Title.
(Series: Construction Management Series
(Sydney, N.S.W.)).

692.8068

Printer BPA
Cover design and photography Di Quick

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PREFACE

Construction contracting has its own terminology, its own doctrines (legal and otherwise) and its own body of legislation. It is different. That is why this book was written. The book is intended not only for those new to the construction industry but also for those in the industry who want to know how and why it is different, and particularly those who have ambition to improve it, or at least avoid the pitfalls.

This book is intended to fill a gap in the literature on construction contracting. It is not a legal casebook, although many cases are referred to for illustration. It is not intended as a definitive statement of the law, although it does attempt to explain relevant law in simple terms. Neither is it intended to provide guidance to the reader on solving any particular problem. That is for a specialist. Every particular problem turns on a unique set of facts. The book may assist the reader to be better informed about when specialist advice is necessary and better able to understand that advice. Most importantly, it is intended as a guide to avoiding situations where problems arise and specialist advice is required.

Contracts are vital to the construction delivery process. Design and construction are carried out under contracts. A contractor's only obligation to build is created by a contract. Usually, a contractor's only right to payment is covered by the contract. The principal's right to compensation for defects is created by a contract. Contracts direct and govern every move.

In any major project there are thousands of individual contracts. Some are contracts of employment, some are for supply of services by public utilities, some are with insurers. This book is concerned with contracts that the principal makes for the provision of design services and construction work, the management of those services and that work, and the chain of subcontracts made down the line.

There is a confusing array of contracts and much competition between proponents of various forms of contract. The purpose of this book is to strip the legal mystique and mumbo jumbo from contracts and expose the basic logic. The book is directed to contractors, principals, project managers, architects, engineers, lawyers, students and others involved in the construction industry.

Examples included in this book are not meant to be recommended precedents but examples of what is actually used in the industry. There is no best way of contracting. It is a matter of 'horses for courses'. The book should help the reader to find the best contracts for a particular project and having chosen them, to administer them efficiently.

After some background on what contracts are, Part I looks at the options for project delivery, the various types of contracts available, and the pros and cons of the various types.

Part II looks at the administration of construction contracts. It covers the basic principles applicable to all construction contracts.

Part III deals with the aftermath, claims, defects and disputes. It also deals with remedies outside the contract, for example those based on unjust enrichment. Most disputes are founded on ignorance — the ignorance of the claimant or the ignorance of the party resisting the claim or the ignorance of those advising them. The ignorance may be of the facts, the law or the most efficient means of resolving disputes. Part III is directed to dispelling some of the ignorance.

ABBREVIATIONS

ABN Australian Business Number	GCMP main contractor's mark-up
ACDC Australian Commercial Disputes Centre	GCP main contractor's preliminaries
ACEA Association of Consulting Engineering of Australia	GST goods and services tax
ACN Australian Company Number	IT information technology
ADOT Arizona Department of Transportation	KPI key performance indicator
AFCC Australian Federation of Construction Contractors	MBA Master Builders Association
AGC Associated General Contractors of America	MBFA Master Builders Federation of Australia
APC adjusted progress claim	NEC New Engineering Contract
BCIRS Building and Construction Industry Reform Strategy	NEDO National Economic Development Office
BISCOA Building Industry Specialist Contractors Organisation of Australia	NPWC National Public Works Conference
BOMA Building Owners and Managers Association of Australia	PC Property Council of Australia
BOOT build, own, operate, transfer	PFI private funding initiatives
BOT build, operate, transfer	PM project management
CIDA Construction Industry Development Agency	PMBOK Project Management Body of Knowledge
CM construction management	PWD Public Works Department
D&C design and construct	RA risk allowance
DPWS Department of Public Works and Services	RAIA Royal Australia Institute of Architects
FIDIC Fédération Internationale des Ingénieurs-Conseils	RFIs requests for information
	SB suppliers' bid prices
	SCB subcontractors' bid prices
	TQM total quality management
	TTP total tender price
	USACE US Army Corps of Engineers

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PART 1

PRE-CONSTRUCTION
CONTRACT
ADMINISTRATION

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CHAPTER 1

INTRODUCTION TO CONTRACT ADMINISTRATION

1.1

WHAT IS A CONTRACT?

If A says to B, 'I will repair your house' and B makes no promise in return, there is no agreement. If B says, 'I will pay you \$1000', then there is still no agreement. Why? Because it takes two to make an agreement. An agreement involves an exchange of promises or goods. A has not yet agreed to accept \$1000 for doing the work. If A says, 'I will accept \$1000' there is agreement on price, but is there a contract?

Unless there is agreement on all the essential terms, the law does not recognise the existence of a contract. Is there agreement on the actual work to be done to repair the house? It may be that A and B know exactly what work is necessary, for example repair of a leak in the roof. In that event, the actual work to be performed is agreed and there may be a contract.

The contract consists of the following express terms:

A will repair B's house

B will pay A \$1000

A will accept \$1000

These terms are said to be 'express' because they are the actual words spoken.

The contract also includes two types of 'implied' terms. An implied term is one that 'goes without saying'. The first type of implied term is implied from the circumstances — since A and B know exactly what repair work they are referring to, the implied term is: 'The work is the repair of the leak in the roof'.

The second category of implied term is implied by law. The law implies certain terms in any contract in which the express terms do not cover the matter. Some of the terms that the law would imply in this contract would be:

- the work will be completed within a reasonable time
- payment will be made upon completion of the work
- the work will be done in a reasonably workmanlike manner
- B will give A reasonable access to the roof to enable A to carry out the work.

Terms may also be implied by statute, for example in New South Wales, the *Building and Construction Industry Security of Payment Act 1999* may give a right to progress payments each four weeks. In most States of Australia there is legislation governing contracts for residential building work. This legislation prescribes some of the conditions of contract, such as express warranties of workmanship. Chapter 15 deals with such legislation. The contract is the sum of these express and implied terms. There will be other implied terms, but unless there is a dispute it will not be necessary to identify them.

An agreement that is legally binding is a 'contract'. But lawyers usually use the terms 'agreement' and 'contract' interchangeably. To confuse the matter more, lawyers often call an agreement that is not a contract a 'void contract'. A void contract is not a contract at all.

Writing is usually not necessary to create a contract. Many everyday contracts are made without words, for example when shopping at the supermarket or catching a bus. A contract made by spoken and not written words is an 'oral contract'. A contract that is made without words is an 'implied contract'. A contract may be partly oral, partly written and partly implied. That part which is not implied is said to be 'express'.

Not all agreements are contracts. Agreements that are not contracts cannot be enforced by legal process. Agreements may be unenforceable for a number of reasons. Some are where:

- the agreement was not meant by the parties to create a legal relationship (e.g. an agreement by a parent to buy a child an ice-cream if the child behaves properly — it was never envisaged by either party that breach would give rise to a right to sue for damages)

- one party did not have capacity to make a legally binding bargain (e.g. a minor, i.e. a person under 18, or someone mentally handicapped)
- the promise of one party was made under duress (e.g. at knife point)
- the performance of the agreement would involve a crime or a tort
- the terms of the agreement are not sufficiently certain.

Much has been written about ‘offer and acceptance’ and ‘consideration’. These are concepts that raise the question of whether there is an agreement. If A offers to do certain work for \$1000 and B says ‘I will pay you \$500 for that work’, there is no acceptance of A’s offer and no agreement. B has merely made a counter-offer. But if A says ‘I accept your price’, then there is agreement.

On the face of it, the agreement is legally binding and is therefore a contract. For one of the five reasons mentioned above, the agreement may not be legally binding or it may be that the contract is unenforceable by one or both parties. This would arise where a law bars action on the contract. For example, in New South Wales the *Home Building Act 1989* s. 10 prevents a contractor from suing an owner under a contract for residential building work unless the contract is in writing. The owner is not barred from suing the contractor. Similar legislation governing contracts for residential building work will be found in most other Australian States (see Chapter 15).

If A offers to do certain work for B and B makes no promise in return, there is said to be no ‘consideration’ and hence no contract. Consideration is a legal doctrine that in practice is unlikely to cause concern. Atiyah (1986: 56) says: ‘The conventional account of the doctrine of consideration no longer accords with the law actually enforced in the courts’. While it is a good idea to read textbooks on the law of contract, care must be taken that statements of alleged principle are not taken too literally. The law is continually changing and developing, and a statement that is true today may not be true tomorrow.

Building contracts involve the provision of goods or services or both. The goods are usually building materials. The services are usually labour and use of plant to effect work but they can include design services and management services. Where the contractor does not contract to provide design or management services, the contract is usually described as a ‘traditional contract’. Where the contractor agrees to carry out design, the contract is usually called ‘design and construct’ (known throughout the trade as D&C). Where the contractor agrees to manage work by others, the contract is usually called a ‘management contract’.

There are almost infinite variations between building contracts, but the variations are not departures from basic principles. If the basic principles are understood, the significance of the variations will become apparent. The purpose of this book is to give the reader grounding in the basic principles.

In the example above of a simple contract by A to repair B's roof, B may decide to have a written description of the work incorporated in the contract. Such a description is called a 'specification'. B may also decide to have conditions of contract covering such matters as insurance and other risks. B may draft specific conditions for the particular contract or select a published standard set of general conditions of contract such as Australian Standard AS2124.

A and B might sign a document (a 'formal instrument of agreement') to record their agreement on the specification and conditions of contract. This document is also called a contract. The term 'contract' is used to describe the arrangement between the parties and also the document that evidences the arrangement. The double use of the term can be confusing. One 'contract' may not be identical to the other.

The name given to a contract may be some indication of what the contract is about but care must be taken because often a particular name is given to a contract to make it appear more attractive. For example, some contractors call their own form of contract a 'Guaranteed Maximum Price Contract' but usually there is no guarantee that the price will not increase.

Sometimes contracts are named after the nature of the work, for example:

- residential building
- domestic building
- civil engineering
- architectural
- air-conditioning
- maintenance
- management
- design and construct (or turnkey, which means the same).

Sometimes contracts are named after the nature of the remuneration, for example:

- lump sum
- schedule of rates
- cost-plus fixed fee
- cost-plus percentage.

Sometimes contracts are named after the nature of the contractual relationship, for example:

- consultant agreement
- supply contract
- leasing contract
- subcontract
- head contract
- nominated subcontract
- concessional contract (e.g. BOOT – build, own, operate and transfer).

Sometimes contracts are given the name or acronym used by the publisher of the standard form of general conditions incorporated in the contract, for example:

- AS2124 (published by Standards Australia)
- NPWC3 (published by the National Public Works Conference)
- CIC-1 (published by the Royal Australian Institute of Architects)
- PC-1 (published by the Property Council of Australia)
- FIDIC (published by the International Federation of Consulting Engineers)
- C21 (published by the NSW Department of Public Works and Services).

Sometimes the name itself conveys nothing about the work, the remuneration, the contractual relationship or the general conditions, for example:

- alliance contract
- guaranteed maximum price contract
- package deal
- negotiated contract
- managed contract
- novated contract.

Hundreds of different names are given to contracts. Sometimes, as a marketing ploy, someone will invent a new name for the contract, which they then promote. Nothing should be assumed from the name. The fine print should be examined to see exactly what it is that the contractor is promising to provide. It may be all of management, design, construction, operation and maintenance or it may be only one or two of these.

Let us go back to the question ‘What is a contract?’ While the answer to that question may be relevant in an examination, in practice what you want to know is whether A and B have a contract. To find the answer to that, first ask:

- Have A and B actually reached consensus on something?
- If so, have they agreed on all the essential terms?

If the answer to either is 'No' then there is almost certainly not a contract. If the answer to both questions is 'Yes' then there probably is a contract unless the answer to any of the following questions is 'No':

- Did A and B intend to create legal relations?
- Did both A and B have legal capacity?
- Was the agreement freely made (without duress)?
- Can the contract be performed without breaking the law?
- Are the terms of the agreement certain?

If you only want the answer to 'What is a contract?' for the purpose of an exam, see the definition in the next section.

1.2

CONTRACTS IN CONTEXT

Anyone engaged in commerce, for example in the construction industry, is continually entering into agreements or contracts with other persons. Contracts establish rights and obligations of the parties and procedures for administration. Contract law is the name given to the sum of legal principles, established by decisions of judges, and statutes that deal with contracts.

The law recognises the bargain as being central to the contract. If two parties exchange promises in relation to a course of conduct or the transfer of property, the law will, subject to certain requirements, enforce that agreement or award damages for its breach.

Whereas many fields of activity are regulated by an Act of Parliament, and therefore in those areas it is necessary to go to the statutes to discover the law, relatively few statutes apply to contract law. A notable exception is in the area of contracts for residential (or domestic) building contracts; this is an area where most Australian States have legislated extensively (see Chapter 15 for more detail). Contract law does not lay down a number of specific rights and duties which the law will enforce. Rather, it consists of a number of limiting principles, subject to which the parties may create rights and duties for themselves which the law will uphold.

Construction contracts may be formed between a contractor and a proprietor, between a contractor and subcontractors, between a principal and a designer, and so on. The relationships, both contractual and otherwise, between the various

parties in the building process have become complex and in many cases quite obscured. It is likely that some co-ordination and contractual problems are bound to occur, resulting in claims and disputes.

Because the contractual relationships between the parties to a building contract are not likely to become less complex in the future, every effort should be made to minimise the number of claims and disputes and the impact they may have on the cost of the project. To achieve this, the parties to a contract should know the legal principles governing the formation of contracts. They should also have better appreciation of contract conditions and their interpretation and a greater awareness of the implication of inequitable allocation of risks and the need for more efficient and effective procedures for administering contracts.

In law a 'contract' can be defined as follows: 'A valid contract is an agreement made between two or more parties whereby legal rights and obligations are created which the law will enforce'. Contracts have no existence outside a legal system. They are a product of the law. They are promises that the courts will enforce, usually by an award of damages for breach. There can be agreements which may be 'morally' or 'socially' binding (binding in conscience), for example an agreement to come to a party, but these are not contracts.

Contracts are part of the law of obligations. The law recognises various obligations owed by people (including corporations) to others, and the law will allow those obligations to be enforced by way of a claim for recompense for breach. Certain wrongs, which are in no way based on promises, can create a liability to another. Under common law, most of these are classified as 'torts'. Statutes can also give a right to recompense. Lastly, there is the law of restitution. Restitution is the restoring to someone of something, or its value in money, where the defendant (the person sued) has been unjustly enriched.

Contracts cannot be considered in isolation. Although a contract may not create an obligation, there can still be an obligation under tort, statute or the doctrine of unjust enrichment. There can be parallel obligations owed under the areas of civil law obligations.

Hence the efficient contract administrator must have knowledge of more than contract law. The efficient contract administrator must always be conscious of the law of obligations generally.

THE ELEMENTS OF A CONTRACT

The following is a brief discussion of a field about which much has been written and many different views held, and in which there are numerous court decisions.

The rules governing contracts are mainly common law rules. But it is important to note that statutes do in some cases affect the making and operation of contracts, for example the *Home Building Act 1989* (NSW) and similar legislation dealing with contracts for residential building work in other States of Australia.

Seven elements are generally regarded as essential to the validity of a contract:

- 1 There must be an intention to create a legal relationship.
- 2 There must be offer and acceptance.
- 3 There must be valuable consideration.
- 4 The parties must have legal capacity to contract.
- 5 There must be a genuine consent by the parties.
- 6 The legality of the object of the agreement must be ensured.
- 7 The terms of the contract must be sufficiently certain.

1.3.1 Intention

The first important factor in the formation of a contract is the necessity for an intention by the parties to create legally binding obligations. If the parties do not intend their agreement to constitute an agreement enforceable at law, there is no contract. For example, a promise by a parent to take a child to the circus if the child mows the lawn would not create a contract in law because it was not the intention of the parties that the promises would create an obligation on which either could sue the other for damages for breach.

The intention may be expressed or implied. Courts do not consider all agreements to be intended as legally binding. Generally, a distinction is made between commercial agreements, which are presumed to be legally binding, and domestic or social agreements, which are not so intended.

If parties A and B enter into a contract whereby A agrees to build a fence for B, then B would expect to be able to recover damages if A refused to pay B when B had finished the work. Both would expect the agreement to give rise to legally enforceable obligations. But a person who failed to keep a dinner

appointment could not be sued for breach of contract even though the host may have incurred considerable expense in preparation.

A problem arises when one party intends that a statement will be legally binding and the other does not. In the context of construction contracts, this commonly arises when one party asks the other for a quotation for a variation. The term 'quotation' is ambiguous. On the one hand it can be an estimate; on the other it may be an offer to perform the variation for the amount quoted. The contractor giving a quotation may intend it only as an estimate; the person requesting the quotation may consider it an offer. It is important to use language that leaves no doubt about the intention to create a legal relationship. Instead of asking for a quotation, it would be better to ask for an estimate or a price.

1.3.2 Offer and acceptance

A second fundamental principle of a contract is that the parties should have reached agreement. An agreement or contract comes about when one party accepts an offer made by another. Whether or not an offer has been made and duly accepted is often difficult to establish. Generally speaking, if an agreement is to be legally enforceable, it must be shown that an offer has been made and that such an offer has in fact been accepted, whether expressly or implicitly in the terms in which it was made.

An offer is a proposal by one party to enter into a legally binding contract with another. It may be made orally, in writing, or implied by conduct. Sometimes, in the making of a construction contract, there are so many matters to be agreed, so many queries from one party to the other, so many changes in drawings and so many individual promises that it is not possible to say just when the contract came into existence. It may be impossible to identify offer and acceptance in the terms envisaged by the classical law of contract. The execution of a formal written contract document (often called a 'formal instrument of agreement'), expressed to contain the whole agreement between the parties, is one way of overcoming the problem. If both parties have signed a written contract, it is not necessary to identify offer and acceptance.

In other instances, the courts have found the existence of a contract from the fact that the contractor has carried out work at the request of the other party even though the parties have not agreed on some issues and no formal offer and acceptance can be identified. It is not uncommon for the parties to still be arguing about the terms of a contract long after the contractor has started work. Since

the recognition in Australia by the High Court (*Pavey and Matthews v. Paul* [1986] 162 CLR 221) of the doctrine of unjust enrichment, there has been less need for a contractor to prove the existence of a contract. Unjust enrichment is dealt with in Chapter 17.

An offer may be made to an individual, to a group of persons, to a company or to the world at large (*Carlill v. Carbolic Smoke Ball Co.* [1893] 1 Q.B. 256). But it is ineffective until communicated, and accordingly cannot be accepted by persons or companies to whom it is not made or by persons ignorant of the offer. For example, assume someone offers a reward for information about the whereabouts of a missing person. Assume that information is given by someone (the informant) that leads to finding the missing person. The informant will not automatically qualify for a reward. To recover the reward by a legal action, the informant must establish a contract and to do that the informant must establish that the informant acted on the faith of or in reliance on the offer (i.e. that before giving the information, the informant knew of the offer of a reward). See *The Crown v. Clarke* [1927] 40 CLR 227.

An example of an offer made to a number of people is an invitation to tender. It may be open tender (capable of acceptance by anyone) or it may be an invitation to a few selected contractors. The offer is accepted separately by each contractor who lodges a tender. The principal inviting tenders may impose conditions on acceptance, for example that acceptance can only be by way of a written tender lodged in a tender box at a certain place by a certain date. An invitation that imposes conditions on acceptance can only be accepted by complying with the conditions.

An offer (e.g. an invitation to tender) may lapse if not accepted by a certain time or date. Generally speaking, an offer can be revoked at any time before acceptance. When a party makes an offer of settlement, the offer is commonly said to remain open for acceptance until a certain date.

An acceptance is a final and unqualified expression of assent to the terms of an offer. A qualified acceptance is a rejection of the offer and the making of a counter-offer. For example, if a contractor offers to carry out a variation for \$1000 and the principal responds: 'Your offer is acceptable provided that no extension of time is applicable', the principal has rejected the contractor's offer and made a counter-offer. The principal cannot thereafter drop the condition and accept the contractor's original offer. The original offer has ceased to be available for acceptance the moment the contractor receives the principal's qualified 'acceptance'. Legally, the principal's qualified acceptance is no acceptance.

Acceptance is generally not effective to conclude a contract until it has been communicated to the offeror and the offeror may either expressly or by implication indicate that acceptance is to be communicated in a particular manner. If that manner is employed, acceptance will usually be effective whether or not it is actually received by the offeror.

Assume that a tenderer has lodged a tender for \$100 000 to carry out contract work and then discovers that the contractor has made a mistake in pricing. The contractor writes to the principal, 'I made an error in my tender. My price is now \$110 000, not \$100 000'. That represents a withdrawal of the tender of \$100 000 and the proposing of a new tender of \$110 000. Assuming that the letter is received by the principal after the closing date of tenders, it is then an informal tender and must not be considered by the principal. It would be the same whether the new price was greater or less than the original tender price.

If the principal had posted a written acceptance of the tender of \$100 000 before the principal received the contractor's letter varying the price, then there would be a contract for \$100 000, but if the contractor's letter varying the price was received by the principal before the principal posted the letter of acceptance, there would be no contract. Acceptance of the tender of \$100 000 after it has been withdrawn by the contractor's letter correcting the error would be no acceptance at all. The moment the principal receives the contractor's letter correcting the contractor's error, the original tender of \$100 000 is no longer open for acceptance. An exception would be where the contractor was contractually bound to keep open the tender of \$100 000 for a particular period.

The general rule is that an offer that can be accepted by posting an acceptance is accepted at the moment the letter of acceptance (duly stamped) is placed in a post box. The fact that delivery of the letter is delayed or even that the letter is never delivered does not terminate the contract which was made at the moment of posting.

The general rule is that acceptance sent otherwise than by post is effective at the time it is received by the offeror. For example, an acceptance by fax is effective when the offeror's fax machine prints it out. The situation is not so clear when an acceptance is sent by email or an oral message left on the offeror's answering machine. However, acceptance appears to have been made when the email first appears on offeror's screen or when the offeror first listens to the voice message. To remove ambiguity over these

technologically new situations, legislation is being considered in each State and the Commonwealth of Australia.

Finally, the person accepting the offer must know of its existence, otherwise there is no contract. See *The Crown v. Clarke* [1927] 40 CLR 227.

1.3.3 Letters of intent

The term 'letter of intent' is ambiguous and best not used. If a contractor has lodged a tender and the principal says, 'I intend to accept your tender', it could be:

- 1 that the principal accepts the tender and is saying the equivalent of 'I accept your tender'
- 2 that the principal does not intend the statement to create any legal relationship and is merely expressing the principal's current state of mind, which could change at any time (the equivalent of 'My present leaning is towards accepting your tender but I want to consider the matter further before making any final decision')
- 3 that the principal intends unequivocally to accept the tender and will be doing so in writing or by signing a formal contract
- 4 that subject to certain things happening, the principal will accept the tender (i.e. the principal is not reserving a discretion to reject the tender)
- 5 that the principal intends something else.

In view of the ambiguities, a letter of intent frequently leads to the unintentional creation of a contract, to a liability based on misleading advice, or to a liability for restitution based on unjust enrichment. The letter is intended to convey something to the recipient, but the intention of the sender and the understanding of the recipient may not be the same.

A letter of intent is usually used where the principal intends a tenderer to start taking steps that would assist in the early commencement of work. The tenderer is likely to incur expense in getting ready and may even forgo other work so that the tenderer will be able to carry out the contract. A principal is better advised to make an offer, for example:

I intend to accept your tender but I am not presently able to do so. Pending acceptance of your tender, you can commence preparations for the work. If for any reason I decide not to accept your tender, I will notify you to stop and I will pay a reasonable price for work done in preparation or \$100 000, whichever is the less. If your tender is accepted, your preparatory work will be taken to be work under the contract and included in the contract price.

Such a letter removes the ambiguity and puts a ceiling on the liability of the principal. Since this is an offer, the tenderer is not bound to accept it and is entitled to decline to start any work without an unequivocal acceptance of the tender.

1.3.4 Consideration

Consideration is said to be the third essential element necessary to constitute a legally binding contract. There are, however, contracts that have been enforced even in the absence of what is generally regarded as consideration.

Consideration is something of value (it need only be a promise), which is given by each party to the other at the time of making the contract. In other words, there must be a benefit and detriment accruing to the party making the promise. Consideration is also referred to as the price paid for the promise. A contract can only be binding on the parties if there has been consideration given by each party to the other. The law will not enforce a promise by a party who has not received something of value or the promise of something of value in return. The law will not investigate the fairness of a bargain or adequacy of consideration, provided that it is of some value. A contract for the sale of a valuable diamond ring for \$1 could be enforceable.

The consideration given must be possible of performance and should be present or future.

In some circumstances the *Contracts Review Act 1980* (NSW), or similar legislation in another Australian States, could provide relief where the applicant for relief is an individual as distinct from a contracting company. Under s. 9 of the Act, matters to which the court or tribunal must have regard include:

- inequality in bargaining power
- unreasonable contract conditions
- relative economic circumstances, educational background and literacy of the parties
- the intelligibility of the language used in the contract
- undue influence, unfair pressure, or unfair tactics
- injustice arising from circumstances that were not reasonably foreseeable at the time the contract was made.

In those cases where the Act applies, if the court or tribunal concludes that the contract was unjust, harsh or oppressive, it can refuse to enforce all or any part of the contract or vary the contract in whole or in part. A variation can be made retrospective (s. 7).

An example of where a contract is void for want of consideration will be found in *Atlas Express v. Kafco Importers and Distributors Ltd* [1993] 3 WLR 339 discussed in section 1.3.6 below. Another example would be where a contractor says that certain work is not part of the contract and the contractor will not carry out the work unless the principal agrees to pay extra. Assume that the principal does agree to pay extra but the particular work is in fact not a variation but work that the contractor was required to perform for the original contract price. In that instance, the contractor has provided nothing to the principal which the contractor was not already bound to provide. The contractor has provided no consideration to the principal in return for the principal's promise to pay extra. The principal should be able to avoid the 'contract' to pay extra. The principal's grounds would be that the 'contract' to pay extra was void for want of consideration.

1.3.5 Capacity of parties

Not all persons who want to enter into a contract are able to do so. In law, a company formed and registered pursuant to an Act of Parliament is regarded as a 'person'. The *Interpretation Act 1987* (NSW) s. 21 provides that in any Act 'person' includes an individual and a corporation, the singular includes the plural and vice versa, and a reference to gender includes any gender. Similar legislation exists in other jurisdictions. Lawyers generally use the words 'company' and 'corporation' interchangeably when referring to a company formed by individuals (the shareholders) and registered under an Act.

A business name, however, is not a person. A contract cannot be made with a business name. The contract must be made with the company or persons carrying on business under the name. Mr John Smith and Mrs Mary Smith may decide to carry on business using the business name 'Smith Constructions'. They should contract in the name 'John Smith and Mary Smith trading as Smith Constructions'. If a contract has as the name of the contractor 'Smith Constructions', it will probably be a contract with Mr and Mrs Smith, but ambiguity may arise. Anyone using a business name must register it in the Register of Business Names. This is a public register that anyone can inspect to find out who is the proprietor of a business name.

All companies must put the Australian Company Number (ACN) on all contracts. If the name on a contract is not the name of an individual or a government, look for the ACN. If there is no

ACN then be on notice that there may be a potential problem. Under the Goods and Services (GST) legislation, the ABN (Australian Business Number) is most important. An individual may have an ABN but cannot have an ACN. A company will almost invariably have both and the ABN will include the ACN.

Usually, enemy aliens and unincorporated associations have no capacity to bind themselves in contract. An unincorporated association exists where two or more persons form an association with common aims, for example a tennis club, but do not have the club registered as a corporation. The association consists of those persons who form it and is not a separate entity from the persons making it up. A contract can be made by the members of the club or by several members acting as trustees, but the club is not a legal person, it is merely the name given to the relationship between the members.

Generally speaking, a contractor should not enter a building contract with a person under 18. There is a real risk that the contractor will be unable to enforce the contract. The *Minors (Property and Contracts) Act 1970* (NSW) covers the capacity of persons under 18 to contract. While they can be bound by certain contracts for necessities, they can, at their election, avoid liability under other contracts. Similar legislation exists in other States of Australia.

Where a contract is entered into with an intoxicated person, one under the influence of drugs or with a degree of mental disability proven to have affected the person to the extent that the person could not understand the nature of what he or she was doing, that person will often be entitled to avoid the contract.

Bankrupts have a limited right to contract, but a building contract should never be made with someone who is bankrupt. In certain circumstances a bankrupt's trustee has a statutory right to intervene and disclaim certain contracts

Once a company becomes insolvent (bankrupt), an order for winding up is usually made by a court. After that the directors are replaced by a liquidator and only the liquidator can make contracts on behalf of the company. Similarly, when an administrator is appointed to a company, any dealings must be with the administrator rather than the directors. A receiver is a person appointed by a creditor or creditors to receive (for the benefit of a specific creditor or creditors) all moneys paid or payable to a company and the receiver is usually given sole right to manage the company. A company under administration or receivership may sometimes trade its way out of trouble, but more often administration or receivership precedes winding up the company.

In the field of residential and specialist building work in Australia, there is usually State legislation restricting the capacity to contract. For example, under the *Home Building Act 1989* (NSW) contractors doing residential building work and contractors doing specialist work (plumbing, gas-fitting and electrical work) are restricted in their capacity to contract. Section 4 provides that they must not contract unless they hold an appropriate licence. Section 10(3) provides that:

A person who enters into a contract in contravention of this Division or who contracts to do work under a Contract that does not comply with this Division:

- (a) is not entitled to damages or any other remedy in respect of a breach of the contract committed by another party to the contract; but
- (b) is liable for damages and subject to any other remedy in respect of a breach of the contract committed by the person.

An unlicensed contractor may possibly recover in an action for restitution based on unjust enrichment (*Pavey and Matthews v. Paul* [1987] 162 CLR 221). The reason is that the action for restitution (frequently called a quantum meruit claim) is not based on any contract and is not a claim for damages.

1.3.6 Consent of parties

An underlying concept of a contract is that the parties have voluntarily consented to make a legally binding agreement. An 'agreement' made at the point of gun is made under duress and is not a contract. Duress need not be physical force. The facts in *Atlas Express v. Kafco Importers and Distributors Ltd* [1993] 3 WLR 339 provide an illustration of how duress can cause an apparent contract to be void. The plaintiff, a carrier, agreed with the defendant to deliver baskets to Woolworths at £1.10 per basket. The carrier discovered that the price was uneconomic. When the carrier arrived at the defendant's premises to collect the baskets, the carrier brought a revised form of contract, which had written on it a charge of £4.40 per basket. The carrier said to the defendant that if the defendant did not sign the new contract, the carrier would not deliver the baskets. The defendant could have refused to sign but it would have been difficult if not impossible to get another carrier in time to deliver the baskets to the defendant's customer, Woolworths, to meet the delivery dates, which the defendant had agreed with Woolworths. Had the defendant defaulted under the contract with Woolworths, the defendant would have been in serious financial difficulties. The carrier had

the defendant 'over a barrel'. The defendant signed the new 'contract', but after the baskets had been delivered, refused to pay more than the originally agreed £1.10 per basket. The carrier sued for the difference between that amount and the amount in the second 'contract'.

The court found that the defendant's apparent consent to the second contract was induced by economic duress, which, in the circumstances, negated the defendant's apparent consent. Hence there was no second contract. It is not a requirement of the common law that the contract price should be reasonable. Consequently, the carrier was bound to the price agreed of £1.10 per basket even though that price may have been uneconomic.

Sometimes there will not be consent by one party because that party is mistaken as to the terms of the agreement. For example, the principal to a construction contract may ask the contractor for a price for a variation. The contractor may nominate a price, which the contractor mistakenly believes is for labour and materials but not for the costs of the delay to the time of completion of the project consequent on the delay that the variation will cause. The principal may believe that the price includes delay costs. In that event, there would not be an actual meeting of minds. Generally speaking, however, the mistake of one party will not suffice to render the contract void, and in this instance the contractor's mistake would not entitle the contractor to avoid the contract.

It is not uncommon for a party to a contract to be mistaken as to certain of its terms. Where that mistake has not been caused by any misleading or deceptive conduct of the other party, the mistaken party will usually have no remedy. Where the mistake has been caused by misleading or deceptive conduct of the other party, the mistaken party may have a remedy in law even if the contract is binding (e.g. s. 52 of the *Trade Practices Act 1974*).

1.3.7 Legality of object

Some contracts will be regarded at law as illegal. These include agreements to commit a crime or tort, hinder justice, act immorally or restrain trade in breach of the Trade Practices Act, and some wagering contracts.

The mere fact that in the course of the performance of a construction contract a contractor has or will breach a law does not mean that the contract is void. In the performance of a construction

contract, a contractor may breach a condition of the development consent or a provision of some act governing safety, protection of the environment or other matter. The contractor may be prosecuted and may also be in breach of contract, but the contract is not illegal or unenforceable.

1.3.8 Certainty

Even though parties have apparently agreed and have acted as if there is a contract, there may be no contract because the alleged contract lacks sufficient certainty and completeness. For example, a contract to build an office building for \$1 million, without any agreement on the size, location or anything else to identify better what is to be built for \$1 million, would be void.

A contract to do an unlimited quantity of work for a fixed price would be void for the same reason, uncertainty. A contract to do a fixed quantity of work without agreement on the price might be saved from being void by an implication of a reasonable price. The law will frequently fill gaps in the agreement between the parties and thereby save the agreement from being void. A typical example is where the parties have not agreed on a time for doing something. The law will imply a term that the obligation must be performed within a reasonable time.

Another example is where there is an apparent power in a contract for one party or the principal's representative to order unlimited contract variations. If there was no limit on variations which could be ordered, the contract would be void because of uncertainty. The law saves the contract by implying that the variations must be reasonable.

The fact that a contract is void does not necessarily mean that the contractor has no right to payment for work done. The award of a quantum meruit (a legal term for a reasonable price for work done) by way of restitution for unjust enrichment is discussed in Chapter 17.

1.4

GENERAL COMMENTS ON CONTRACTS

1.4.1 Oral and written contract

Unless specifically required by law, contracts do not have to be made in writing or be evidenced in writing. In fact the majority of contracts are formed orally. However, in the context of

construction contracts, it is most imprudent to rely on oral contracts because proving the content of an oral contract is often difficult. It is for this reason that the parties to a contract should make the terms of the contract in writing. In some cases statute law (usually in the field of residential building work) now requires that for a contract to be enforced, it must be wholly in writing or evidenced in writing. For example, contracts which in New South Wales are required by statute to be in writing include contracts for the sale of land and buildings (*Conveyancing Act 1919* [NSW], s. 23C), contracts for residential building work and specialist building work and contracts to vary any such work (*Home Building Act 1989*, s. 7).

1.4.2 The significance of a written contract

A written contract usually supersedes all previous agreements, correspondence and so on. What is written is what is meant. Such is the finality of a signed contract that a complete understanding of all the contract conditions by both parties is essential.

Except where otherwise required by statute, documentation is not necessary for a contract to exist, but once a written, signed contract is finalised the law will attach full significance to it. The law requires that the content of the contract must be observed or the party breaching the contract must pay any damages incurred by the other party as a consequence of the breach.

In rare instances a court (or an arbitrator in an arbitration) will order rectification of a mistake in a written contract. For example, if both parties have agreed on a price of \$100 000 and, in error, a nought is left out of the written contract (so the price appears as \$10 000), the court may, on the application of either party, order that the contract be rectified by adding the missing nought. However, where only one party has made a mistake, the courts will not order rectification. For example, if a tenderer leaves a nought off the tender price so that it is \$10 000 instead of \$100 000 (as intended by the tenderer) and, in ignorance of the mistake, the principal accepts the tender, a court will not order rectification.

1.4.3 Principal's point of view

A person wanting to have a building built expects reasonable certainty as to cost, time and finished product. The person wants professional consultants to translate the brief adequately into drawings and specifications, a contractor who can carry out the work in a satisfactory manner, proper documentation, and the professional administration of the contract.

The formulation of a construction contract must be a team effort. Good legal advice must be part of the input. When entering into a contract the best way of assessing the adequacy of the document is to assume that there will be disputes between the contracting parties during and at the end of the contract. Contracting parties should examine how each party would stand in those disputes under the terms of the contract. To be in the best bargaining position, all contract matters should be fully and consistently documented as work proceeds.

When a document is ambiguous, the courts apply a rule of interpretation known as the ‘contra proferentem’ rule. The rule is that the ambiguous term will be given that meaning which favours the party who was not responsible for the drafting or selection of the ambiguous document. In other words, the ambiguity will be construed as contrary to the interests of the party responsible for the ambiguity. In residential building work, the form of contract is usually drafted or selected by the contractor, hence the owner gets the benefit of the ambiguity. In commercial building work, it is usually the owner who drafts or selects the form of contract, hence the contractor gets the benefit of the ambiguity.

General conditions of contract usually adopt the formula ‘if event A occurs then B will apply’. Rarely do they say what will happen if A does not occur — B may apply or it may not. Ambiguities are more common than is generally appreciated. Usually the courts try to find an interpretation that will support the effectiveness of a contract, but if the ambiguity is in a clause that attempts to exclude one party from liability, they adopt a more restrictive approach.

1.5

ACTS AND REGULATIONS

Building and construction contracts are formed, administered and discharged within the boundaries of common law and statute law. Common law is judge-made law based on that originally developed in England, and subsequently in Australia, over many centuries. Statute law (legislation) is law made by a parliament or pursuant to a power given by a law made by a parliament. Each parliament has a specific jurisdiction. Chapter 15 deals specifically with legislation. Since (except for Commonwealth Acts) legislation is different in each Australian State or Territory and from

time to time new legislation is made and old legislation is amended or repealed, it is beyond the scope of this book to list all relevant legislation. A regulation is made by the Governor on the recommendation of a minister pursuant to a power given in an Act.

1.5.1 The *Trades Practices Act 1974*

The *Trades Practices Act 1974* is an Act of the Commonwealth Parliament of Australia. It binds the Commonwealth Government, statutory bodies created by a Commonwealth statute and companies created pursuant to a Commonwealth or a State Act, but not statutory bodies created under a State Act or State governments. The main purpose of the Act was to eliminate restrictive business practices, namely price fixing, collusion and restrictions on competition, and to provide protection to the public. The effect of the Act on building and construction contracts includes the area of price fixing and collusion among contractors and subcontractors. The Act promotes open competition without undue restrictions and limitation.

A most important provision of the Act is s. 52 (in Part V) which provides that: 'A corporation shall not, in trade or commerce, engage in conduct that is misleading or deceptive or likely to mislead or deceive'. Section 82 of the Act provides that 'A person who suffers loss or damage by conduct of another person that was done in contravention of a provision of Part IV or Part V may recover the amount of the loss or damage by an action against that other person or against any person involved in the contravention'.

To cover individuals, State Government corporations and business enterprises not bound by the Trade Practices Act, each Australian State has enacted legislation in terms almost identical to ss. 52 and 82 of the Trade Practices Act. In New South Wales the provisions are in ss. 42 and 68 of the *Fair Trading Act 1987*. Hence a person or a government department can be liable for misleading or deceptive conduct in trade or commerce. With government departments, the problem is to show that the conduct was in trade or commerce as distinct from in the course of government.

1.6

A BRIEF HISTORY OF BUILDING CONTRACTS

The earliest recorded reference to a building contract comes from one of the laws of Hammurabi, the Babylonian conqueror: 'If

a contractor builds a house for a man this man shall give the contractor two shekels of silver as recompense. If a contractor builds a house and does not build it strong enough and it collapses and kills the owner the contractor shall be put to death'. In the Middle Ages, design and construction responsibilities were divided. The building designer was a clergyman and only paid rare visits to the building site. Master masons carried out the work on the actual site.

Lump-sum contracts were common in the Middle Ages for the erection of major works such as castles or palaces. For such works it was common to draw up a separate contract for the main trades. The mason was bound to a completion date and had to offer a bond to guarantee ability to carry out the works. The principal often co-opted the services of a consultant architect to ensure that the contractor carried out work in accordance with the contract. The architect's name was written into the contract as agent for the principal. At the end of the sixteenth century a new personality appeared in the French building industry. This was the entrepreneur, a person who stood between the principal and the other tradesmen. The entrepreneur was more of a businessman than a contractor.

By the end of the eighteenth century the building industry in Britain was in such chaos that a series of government inquiries led to public tendering based on gross tendering on a competitive basis. One principal tradesman had to be placed in charge of the whole contract. Associations of builders, architects and other professionals were formed in Britain in the latter part of the nineteenth century. Distinct roles and functions of contractor, architect, engineer, quantity surveyor and so on, laid down at this time, persisted until the late 1960s. By then, lump-sum contracting by competitive tender was standard industry practice, with sequential and separate responsibility for design and construction. In the first half of the twentieth century, the domestic speculative builder combined design and construction activities together to offer a 'package deal' which later became known as the 'design and construct' delivery method.

In the twenty-first century, traditional roles are once again being intermingled, with many new groups entering the building process and complex contractual relationships replacing the more secure and time-tested lump-sum contracting arrangements.

There are two basic types of standard form of general conditions used in Australia for major works. The two types reflect the different approach of architects compared to engineers. In the

first category is the JCC Contract published in 1993 by the Royal Australian Institute of Architects (RAIA), the Building Owners and Managers Association of Australia (BOMA) and the Master Builders Associations (MBA). This contract had its origins in earlier contracts such as MBW1 1978 and E5b 1970 and before that, in the English RIBA contract (now the JCT Contract). But it is only used for architectural works and has not gained acceptance in the government sector. Where quantities are used, there is provision for a bill of quantities but not a schedule of rates.

In 1997 the RAIA published yet another form of general conditions of contract, known as CIC-1, in an attempt to provide a more efficient form of conditions of contract than JCC. In 1998 the Property Council of Australia published another form of general conditions known as PC-1.

In Australia, as in England, there is a second type of standard form of general conditions favoured by engineers. In England it is the ICE Conditions (now in the sixth edition) and the New Engineering Contract (NEC) 1995. In Australia it is exemplified by the Standards Association's general conditions AS2124. These general conditions can be traced back through CA 24 (published by the Standards Association in 1973) to earlier editions of the ICE Conditions. The FIDIC (4th edition, 1987) conditions are also based on the English ICE Conditions. These are used widely in international contracts.

In 1973 the National Public Works Conference (a conference of the Public Works authorities of the States, the Commonwealth, the Northern Territory and the Australian Capital Territory) published NPWC1. This contract was intended for government construction work. Some members of the Conference did not adopt it. The current edition is NPWC3-1981.

In 1981 there was a move in the construction industry for uniformity of general contract conditions. It was seen that the Standards Association offered the best neutral ground for the various interested groups to push their respective cases. A drafting committee was established by the Standards Association. It included representatives of the AFCC, MBFA, RAIA, ACEA, NPWC, Elcom NSW, PWD NSW and BISCOA. The committee decided to adopt NPWC3 rather than AS2124-1978 as the base document and it proceeded to amend NPWC3 to make AS2124-1986.

However, the much sought after uniformity was not to be. As soon as the final document was published, various vested interests attacked it. Some said it was biased in favour of the

contractor. Others said it favoured the principal. Some forecast disaster for consultants acting as superintendent, while others spoke of great changes in risk allocation. AS2124-1986, however, is widely used by engineering consultants and is increasingly being recommended by architects to their principals. It is frequently used for trade contracts in construction management projects.

In the early 1990s, some sections of the construction industry persuaded Standards Australia that the risk allocation in AS2124-1986 should be changed to transfer more risk to the principal. The result was a new edition, AS2124-1992. But AS2124-1992 not only changed risk allocation but also included many ambiguities. Hence many users of AS2124-1986 (mainly the NSW Department of Public Works and Services [DPWS] and Sydney Water) decided to stay with AS2124-1986. AS2124-1992 was not as well received by the industry as its predecessor. Since then, Standards Australia has published a number of other contracts, none of which have received widespread acceptance.

A major change, which occurred in the 1970s, was the recognition of management as a function distinct from design and from construction. This gave rise to 'construction management' and 'project management'. The first major 'Construction Management' and 'Fast Track' project in Australia was the construction in the mid-1970s of Westmead Hospital by Concrete Constructions Pty Ltd for the NSW Public Works Department (PWD). In essence, it was a cost-plus contract with one head contractor and numerous subcontractors. The largest Construction Management Contract in Australia was the new Parliament House Project in Canberra in the mid-1980s. Again, this was essentially a cost-plus contract with one head contractor and many subcontractors.

The first major Australian Construction Management Contract to use the 'agency arrangement' (described in detail later) was the Darling Harbour Project for the Darling Harbour Authority in Sydney in the mid-1980s. Leighton Contractors Pty Ltd contracted to construct the project by letting, as agent for the Darling Harbour Authority, 'Trade Contracts' to many different contractors for separate aspects of the work. Leighton Contractors were paid progressively a percentage of the cost of the Trade Contracts and for that percentage, they managed the construction for the Authority. The 'agency arrangement' proved very popular for projects where completion in time for the Australian Bicentenary celebration was important.

While there have been standard forms of building contracts for over a hundred years, and the benefits of standard forms are well known, in recent years in Australia there has been a push by the legal profession to abandon the use of standard forms. One reason for this is the desire of the legal profession to expand into one of Australia's biggest industries. The larger legal firms have established 'Construction Law Divisions' which specialise in drafting construction contracts. Each has its own 'standard forms'. Now that lawyers are allowed to advertise, they more aggressively promote their own forms.

1.7

FUNDAMENTALS OF CONTRACT ADMINISTRATION

Once a successful tenderer is selected, it is common for the principal to send a letter of acceptance. A contract that is not required to be evidenced in writing can be accepted orally. Sometimes a letter of intent will unintentionally create a contract. Frequently a principal or a contractor will want the contract to be evidenced by a more formal document signed by both parties. Such a document is called a 'formal instrument of agreement'.

There is an unfortunate practice in the private sector of the principal telling the contractor to proceed before the contract is evidenced in writing. The principal then attempts to negotiate the conditions to finally bind the parties. It is too late. A contract usually exists and if it does not, the contractor would have a right to be paid a reasonable price for all work done (a quantum meruit) on the basis of the principal's instruction to proceed. The claim would not be based on a contract but on the doctrine of unjust enrichment.

It is probably professionally negligent to advise or allow a principal to let a contractor start work before all the terms the principal wants have been agreed in writing and signed by the contractor. Once there is a contract, the contractor can refuse to agree to any additional conditions. This does not mean that a formal instrument of agreement must be signed but that there must be correspondence evidencing the terms of the contract. Some principals have a practice of not having a formal instrument of agreement.

The success of contract administration depends on an effective communication between all the parties involved. This involves establishing relationships between the parties, defining

responsibilities and determining the most appropriate administrative procedures. The contractual parties must ensure that the lines of communication are established and kept open throughout the contract period.

The fundamental aspect is to create a workable relationship between the contractual parties. This involves the determination of rules and procedures to be followed in the administration of the contract.

1.7.1 Fundamentals of contract administration for principals

Effective administration of construction contracts is a prerequisite for achieving successful project outcomes. The fundamentals of contract administration relevant to the principal are:

- to appoint suitable consultants
- to define project scope
- to set the key project objectives of cost, time and quality
- to assist in formulating a project brief
- to select the most appropriate method of project delivery
- to ensure accuracy and completeness of tender documentation
- to award a contract to the contractor on fair and equitable conditions of contract
- to appoint an experienced superintendent for administering the contract during the construction stage
- to avoid making changes to the design unless knowing the cost and time impact of such changes
- to pay the contractor strictly in accordance with the contract
- to monitor progress and the use of a contingency
- to resolve issues as early as possible before they develop into major problems
- to document actual progress in terms of cost, time and the use of resources to be able to defend against a potential claim from the contractor
- to advise the contractor in writing of any deviation from contract conditions and to request compliance with same within a specified period.

1.7.2 Fundamentals of contract administration for contractors

The fundamental aspects of contract administration from the contractor's point of view are:

- to execute the project strictly in accordance with the contract conditions
- to award subcontracts on fair and equitable subcontract conditions
- to monitor and control progress of subcontractors

- to pay subcontractors on time
- to minimise overall project time, thus reducing site overheads
- to balance increased direct costs of additional resources on critical activities, against possible saving in site overheads
- to advise the principal early in the project that the program is arranged to maximise use of resources and any additional work required
- to allow sufficient time to rearrange activities, acquire additional resources, perform additional planning, fabrication, etc.
- to manage extensions of time and a prolongation of overhead costs
- to recommend to the principal not to make any changes to the design
- to document the actual progress compared with a program to identify areas of progress loss
- to take immediate action on contractor-caused problems and immediately advise the principal of other problems
- to instruct all internal staff to carry out work as specified in the contract documents, unless written instructions have been given by the principal's representative.

PROJECT LIFECYCLE

2.1

INTRODUCTION

The development of construction projects, irrespective of their type and size, pass through a number of discrete and largely sequential stages commonly known as a project lifecycle. These may broadly be defined as the concept, design, tendering, pre-construction, construction and commissioning (see Figure 2.1). The effective management of each of these stages is vital for project success. Equally important is the overall co-ordination and integration of the work across the entire lifecycle of the project. This function is the domain of project management.

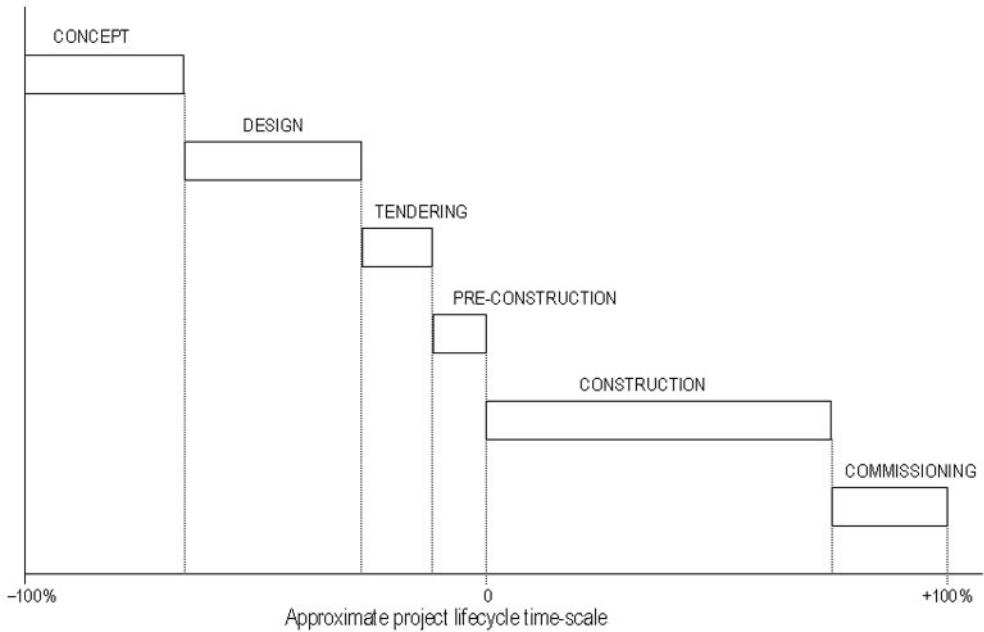
A lifecycle of construction projects is relatively long and involves a large team of people who are contracted to the project. These range from the principal (the owner for whom the job is being done), the financier, the project manager, various consultants and designers to contractor, subcontractors and suppliers. Most form a contract with the principal while some, notably subcontractors and suppliers, form a contract with the main contractor. Construction projects, particularly those in the building sector of the industry, are characterised by a multitude of individual contracts.

A unique feature of construction projects is the discontinuity in the team membership across the project lifecycle. While some team members such as the principal, designer and project manager stay together for the duration of the project, others such as subcontractors are a part of the team for only a limited time.

The project manager is responsible for the overall management

FIGURE 2.1

STAGES OF THE PROJECT LIFECYCLE



of the project's lifecycle, the crucial aspect of which is effective formation of individual contracts and their administration. Because there are so many individual contracts, a risk of failure in at least one of them is quite high. It may well be that the failure of only one contract may seriously affect the project's outcomes.

This chapter will review the project lifecycle and examine important issues relevant to its individual stages. It will also identify team participants involved in individual stages and briefly comment on the type of contractual links they form.

2.2

CONCEPTUAL STAGE

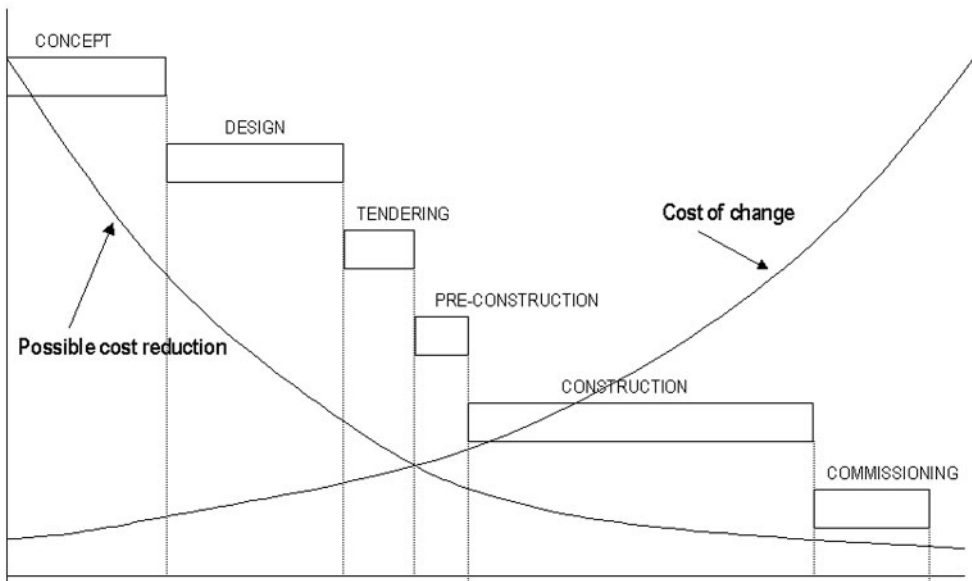
A conceptual stage of the project lifecycle defines the extent of the work of the project and its end product. It is the first and by far the most important stage in the lifecycle since the effectiveness of its execution will influence the ultimate outcome. Well thought out and clearly defined scope provides a concise picture of what the principal needs and wants. It provides a basis for the development

of a project brief from which the designer can develop a functional, aesthetically pleasing and economically viable design.

The conceptual stage provides an opportunity to maximise the project's successes since decisions taken in this stage have the greatest influence over its objectives. Conversely, failure to interpret the principal's needs and objectives accurately will commonly lead to an incomplete design with probable cost and time overruns arising from rework in the construction stage. This is illustrated in Figure 2.2.

FIGURE 2.2

COST OPPORTUNITY/IMPACT



The development of a project concept is a complex and difficult task. Its execution consists of providing clear and concise answers to a series of questions such as:

- what does the principal need and want?
- what resources are required?
- what resources are available?
- what standard of performance is required/
- what external factors need to be considered?
- who will make the key decisions?

In conceiving a project, the principal may seek advice from a range of consultants including:

- project manager
- financier
- legal consultant
- economist
- environmental consultant
- designer
- quantity surveyor.

The extent of outside advice depends on the nature of the project and the principal's experience. In seeking advice, the principal will form contracts with selected consultants who will provide specific services during the conceptual stage. But the principal will not yet commit to long-term contracts that would extend beyond the conceptual stage with any of the above consultants. The principal will form long-term contracts later once the decision has been made to proceed with the project.

Important issues relevant to the project's conceptual stage will now be briefly discussed.

2.2.1 Statement of principal's needs

The construction principal is the person who initiates a project. Principals may be individuals, corporations or governments. Their desire to initiate a project is commonly driven by the need for:

- a capital investment in a new construction facility (this could be a housing, commercial, industrial, public or engineering project)
- a capital improvement of the existing facility
- the provision of infrastructure services.

While experienced corporate and government principals are quite capable of defining project needs and communicating them to the other stakeholders, they may, when the need arises, engage the services of a project manager or another suitably experienced consultant. Inexperienced principals are well advised to seek the services of expert consultants throughout the conceptual stage.

The expression of project needs provides a basis for the development of a project scope and later a project brief, from which the facility will be designed in the next, design stage.

2.2.2 A scope statement

A scope statement defines in detail *what* work is to be accomplished. In doing so it formulates key objectives such as cost, time, quality and functional requirements. It also defines important design parameters such as:

- physical scale, shape and aesthetics of the proposed structure
- technical, operational and environmental requirements
- performance requirements.

2.2.3 A feasibility study

A feasibility study is a process that attempts to assess whether or not the proposed development scheme or schemes will meet the objectives of the project as they have been defined. It commonly involves technical and economic analyses of alternative schemes. It is a very important decision-making process that determines whether or not the project will proceed to the next design stage or be abandoned.

The feasibility study assesses available alternatives on technical and economic grounds. Technical feasibility considers a range of issues such as technical performance, construction methods, safety issues, availability of resources, lifecycle performance, environmental issues, and schedules.

Economic feasibility is an assessment of the likely financial performance of proposed development schemes. It is commonly performed using one or more of the following methods:

- return on investment
- payback period
- net present value
- internal rate of return
- cost benefit analysis.

The feasibility study is largely based on incomplete and often subjectively derived information, yet its outcome is a set of crucial financial data on which the principal will decide whether or not it is feasible within the defined objectives to proceed with the preferred alternative. It is clearly an important task for which the principal should seek assistance from specialist consultants such as a building economist or a quantity surveyor.

2.2.4 A strategic plan

A strategic plan formulates the most appropriate strategy for the preferred development alternative defined in the feasibility study. It defines the extent of the work to be undertaken (the project scope), why it is being developed, who is going to do it, when it is to be done and what it will cost, and how it is to be done. It integrates the principal's needs and objectives with technical, operational and management requirements to create an overall

strategy for the preferred development scheme. A strategic plan will address a range of important issues such as the following:

2.2.4.1 Project organisation

A wide range of delivery methods is available for procuring construction projects. They range from the 'traditional' method to an array of 'managed' delivery methods. It is important to select the method that would best suit the project and would ensure achievement of the defined objectives. The decision on the most appropriate method commonly involves considering issues such as the nature of the project, its objectives, the degree of risk and to some extent the principal's preference. The selected method provides a structure for the organisation of the project and defines the roles of individual team members.

In defining the roles of individuals it is particularly important to spell out clearly who has authority to give what directions and who is responsible for doing what. The definition of financial delegations and the limits of financial delegations must also be clearly articulated. It is essential that there is no overlapping of responsibility. Furthermore, the demarcation between roles of individuals should be apparent.

The traditional and managed project delivery methods will be discussed in detail in Chapters 5 and 6.

Communication links

The project's organisation structure sets out the roles that individual team members will be required to perform. It also defines communication links among such team members.

'Communication is the transferring and understanding of meaning' (Robbins et al. 2000). The quality, timeliness and relevance of information provided to team members and the ability of team members to act on it is essential for effective decision-making and ultimately for the success of the project. The effectiveness of the transmission and dissemination of information is therefore a key activity worthy of managerial attention.

Communication within the project organisation is both oral and written. Oral communication is particularly important within the project team in facilitating informal discussions, while written communication is essential for administering contracts and allocating risks.

The communications process is more than simply conveying a message; it is also a source of control. Conditions of contract, drawings, specifications, bills of quantities, and instructions and directions are the usual source of contractual control.

To facilitate effective communication, procedures for oral and written communication within the project team must be developed and complied with. Large projects would benefit from employing an appropriate information technology (IT) system.

Project organisation staffing

The number and the composition of staff in the project's organisation will depend on the type of the organisation, the size and the nature of the project, the budget and the method of project delivery. Traditionally delivered projects commonly bring together the principal, architect, structural engineer, other design consultants, main contractor, subcontractors and suppliers of materials and equipment. Managed options of project delivery such as construction management and project management (Chapter 6) involve, in addition to the above people, construction and project managers.

From the contract administration point of view, it is important to remember that each member of the project team is contractually linked to another member, usually to the principal or, in the case of subcontractors and suppliers, to the main contractor. The authorities, obligations and remuneration of a team member will be governed by that member's particular contract. The resulting multitude of contractual links, which is typical for construction projects, raises the need for effective administration of contracts.

Project control plan

The objective of a project control plan is to monitor the actual performance, evaluate deviations from the plan, and take necessary actions to correct any unfavourable trend or to take advantage of an unusually favourable trend.

Project control plans are forecasts of future events. No matter how detailed, they are unlikely to be 100 per cent accurate, and minor or major deviations from the plan must be expected. The development and implementation of an appropriate project control mechanism will ensure that deviations from the plan are identified and dealt with.

Total cost and time budgets

Budgets provide a yardstick against which both progress and outcomes are measured. Cost and time budgets are an important part of strategic planning. They ensure that resources necessary for the execution of the project and for achieving project objectives are available.

The project cost budget is the maximum amount of money the principal is willing to pay for the project. It will be broken up into the cost of each stage of the project lifecycle and will also include a contingency. Although information on which decisions are made in the conceptual stage is largely incomplete, every effort must be made to ensure reasonable accuracy of the cost budget. A similar degree of prudence must be exercised in developing a time budget for the project. The principal must also consider the risk of the budget being exceeded and what this will mean for both the principal and the project.

With the development of a project budget, the principal can proceed to secure the necessary project funding.

Environmental impact

Since activities of the construction industry impact significantly on the environment, most developed countries impose comprehensive environmental planning laws and regulations to control construction activities. In Australia local councils, various statutory authorities and environmental courts administer such laws. An important aspect of this process is the requirement for preparing an environmental impact statement for each new development, which must present all facets (both beneficial and harmful) of the impact of a proposed development on the immediate environment. It is only a matter of time before additional environmental laws will be introduced to control the level of gas emissions and the volume of industrial wastes on construction sites.

2.2.5 A project brief

The final activity that takes place at the conceptual stage is the development of a project brief. A brief is a detailed account of the principal's requirements for a new construction facility. It is directed at the design team, who converts it into a project design. Typically, a brief states the principal's needs and project objectives, defines the project's scope, and includes budgets and schedules. A brief must be complete, accurate and unambiguous to enable the design team to translate the principal's needs and objectives accurately into a project design. An incomplete, inaccurate, vague or contradictory brief will lead to an erroneous design which is likely to become a major source of variation claims.

Who is responsible for the preparation of a project brief? In short, it should be a team effort involving the principal, project manager, design consultant and any other relevant consultants. The role of a design consultant in briefing is particularly important

and under no circumstances should a brief be prepared without a design consultant's input. It should be remembered that these days, usually neither the design consultant nor other consultants (including the project manager) have a contract extending beyond the conceptual stage. It is, however, anticipated that once the principal has decided to move the project to the next, design stage, the principal would extend the design consultant's contract to include design and documentation of the facility. It is also likely that the project manager's contract would be extended beyond the conceptual stage to cover the management of the entire project lifecycle.

The principal's acceptance of a brief signifies the major commitment on the part of the principal to proceed to the design stage. Modifications of the brief beyond this point should be avoided at all cost since they would adversely affect the project's schedule and the cost budget.

2.2.6 Consultant agreements

Various consultants involved in the conceptual stage are contracted to the principal. These are basic contracts for services and almost always cover the conceptual stage only. Consultants are commonly paid a lump-sum fee.

2.3

DESIGN STAGE

2.3.1 Managing the design stage

An adequately defined and recorded briefing process is essential to ensure that the principal's requirements are effectively transformed into the completed facility. It should not be the prerogative of the design consultants to prepare their own briefs. Ambiguous or inadequate briefing of the project team will inevitably lead to problems, misunderstandings and conflict in the administration of the contract.

The concept of the project, defined in a brief, will be translated into a physical design of the facility and documented in the form of drawings and specifications. These will be supplied to the local planning authority to secure development and building approvals, and will also form the basis of tender documentation. Bidding contractors will rely on information in the tender documentation to formulate a construction strategy, develop time and resource

schedules, and calculate a tender price. After the award of a contract to the general contractor, tender documentation will become contract documentation, and will be relied on by the contractor as accurate and reliable information for construction.

It should now become clear that the quality of design documentation is vitally important for the various post-design processes outlined above. Inaccurate or incomplete documentation may cause delays in securing development and building approvals; problems in co-ordinating other components of tender documentation, particularly the bill of quantities; erroneous tender prices; delays in construction; and a high incidence of variation claims which may lead to a contractual conflict.

The design stage needs to be managed and managed effectively to ensure the required high-quality standard of the design documentation. The key objectives of project time, cost and quality will be seriously affected by a poorly managed design stage. Research has shown that frequent changes to the design, and mistakes, omissions and ambiguities in the contract documentation are responsible for more than two-thirds of all the variation claims (Bromilow 1970, 1971; Levido et al. 1981). These in turn cause projects to overrun on time by 20–30 per cent. When combined, these problems arising from poor design documentation significantly erode the financial viability of construction projects. The decision made by the NSW Department of Public Works and Services to abolish the use of bills of quantities on government projects reflects the concern of the major construction principals about the efficiency of the documentation process.

Faults in design and documentation become apparent at the construction stage, when the cost of correcting them is relatively high. This is graphically shown in Figure 2.2. Conversely, the greatest propensity for significant cost efficiencies lies in the pre-design and design stages, while few if any cost efficiencies can be realized at the construction stage.

The design stage needs to be managed in much the same disciplined way as the construction stage to ensure high-quality design and documentation, and hence a more effective performance of the entire project. The key elements of effective design stage management are:

A design management plan

The main purpose of such a plan is to formulate a strategy for developing the best possible design and the associated

documentation that meets the principal's needs and the project's objectives. It also resolves technical and co-ordination problems and satisfies legal and environment regulations.

A most important aspect of the design management plan is to allocate responsibility for suitability for purpose. The overall design and each aspect of the design must be suitable for the principal's intended purpose. The design management plan should identify who is responsible for ensuring that each aspect of the design is suitable and satisfies all other requirements.

A cost budget

The total project cost budget is formulated in the pre-design stage. Because no design documentation is available at that time, the budget contains a contingency for 'unknowns'. A specific sum is set aside as a budget for the cost of design and documentation together with an appropriate design contingency.

An effective budgetary control should ensure that the design consultant designs the facility for its expected lifecycle within the project's budget. This is commonly referred to as 'designing to a cost' as opposed to 'costing the design', which is an undesirable practice that largely ignores budgetary constraints.

Effective management of a design contingency is equally important. This contingency has been set aside for 'unknowns' and should not be used to pay for design mistakes.

Design appraisal

Since the design of a facility takes place over a considerable period and tends to influence project outcomes significantly, it needs to be undertaken efficiently and productively. A process of value management can be applied to ensure that the principal derives value for the investment.

Value management is a disciplined and systematic approach to appraising the design of a project in order to ensure that it meets the objectives and functions in the most economical way. It also helps to improve the design's 'buildability'.

2.3.2 Design process

The process of design involves three distinct steps:

- 1 schematic design
- 2 preliminary design
- 3 final design.

Schematic design phase

The functions of the schematic design stage are (i) to convert the project's philosophy and specific objectives described in the brief into a design concept, and (ii) to secure the development approval from the local authority. Specific activities that need to be undertaken in this stage are:

- analysis of project objectives, functions and services
- understanding of functional relationships
- understanding of materials needed and technical requirements to be met
- analysis of structural systems
- familiarisation with the site, its layout, accessibility, access to services, etc.
- development of sketch design
- linking the sketch design to the site
- examination of external and internal traffic flow
- understanding of environmental requirements
- evaluation of energy requirements
- understanding the regulatory framework
- submission of a development application including the environmental impact statement to the local authority
- securing the development approval with or without conditions
- appraising the design using value management
- firming up the construction cost.

The design brief requirements are first translated into a preliminary design scheme or concept by focusing on issues such as site aspect and orientation, size, shape and height of the facility, its appearance, suitability for purpose (functionality) and compliance with the local planning and environmental requirements. A preferred design scheme emerges from a systematic analysis of project needs, technical issues and various constraints.

The design team then prepares a development application for submission on behalf of the principal to the local development authority. The application consists of details of land title and intended use, sketch drawings, and any other information required by the local authority. It may require the inclusion of the environmental impact statement.

Granting the development approval is a major milestone in the development of the project. The design process will now move towards its next phase, a preliminary design phase. However, the schematic design should first be appraised using value management.

Preliminary design

The aim of the preliminary design stage is to formalise the design scheme into a coherent design concept that includes more detailed sketches of architectural, structural and services components of the proposed facility. This is a highly important stage of the design process. Structural systems will be appraised, construction techniques prioritised, materials selected, and various performance requirements verified. The key objective is to develop the spatial solution and exterior design of the structure for full development in the final design stage. Since design elements are developed in more details, it is now possible to prepare a more accurate cost estimate of the construction stage.

Final design and documentation

The aim of the final design step is to fully develop the design in accordance with the brief and various technical and environmental regulations, achieve its full co-ordination and integration across all the design fields, prepare the design documentation and secure the building approval from the local authority.

The outcome of the final design and documentation step is the production of design documentation in the form of:

- working drawings: architectural, structural and services (but not the shop drawings to be provided by the contractor)
- specifications
- a range of schedules of materials and finishes
- sometimes a bill of quantities.

The design team will prepare the building application for submission on behalf of the principal to the local authority. The purpose of the building application is to ensure that the design of the proposed facility complies with the technical codes and standards (such as the Building Code of Australia).

The final appraisal of the design is intended to ensure that the project's objectives have been met and that the project is financially viable.

2.3.3 Consultant agreements

The design stage begins with the selection of design consultants, unless the principal has already engaged them in the preceding stage. On building projects, the architect is commonly the main design consultant with the responsibility to design the building in accordance with the principal's brief, and to ensure the compliance

with various building and environmental codes and regulations. Structural and services designers may either be engaged directly by the principal or by the main design consultant. In either case, the main design consultant is responsible for the overall co-ordination and integration of the design.

When the traditional method of project delivery is used, the main design consultant is also likely to assume the role of project superintendent. This task will require the design consultant to administer the contract between the principal and the contractor during the construction stage.

Consultants such as a quantity surveyor and a value manager are commonly employed in the design stage with a view to ensuring the cost efficiency and buildability of the design.

The criteria for selecting design consultants need be no different from those that commonly apply to the selection of construction contractors. The selection is based not only on the ability to produce a competent design but also on the ability to manage the design and documentation process within the cost and time budgets, to ensure maximum buildability of the design, and to administer the contract in the most competent manner. Standard conditions of contract for the engagement of design consultants, such as those produced by the RAI A, are most commonly used.

Before selecting design consultants, the principal will need to ensure that:

- a concise brief is available. It is the principal's responsibility to explain precisely what is wanted (including the purpose for which it is wanted) and to define what latitude the designers have to use their own talents to achieve innovative functional or aesthetic features while still achieving the principal's objectives of time, cost and quality.
- a standard checklist of requirements of consultants has been developed. It will be used to compare and rate competing consultants.
- key personnel of competing design consulting firms, who will be assigned to the project, have been nominated.
- a budget for consultant fees has been determined; open-ended fee agreements should be avoided wherever possible.

At the time of entering into a contract with design consultants, the principal will also need to ensure that consultants agree in writing to the project brief, fee structure and personnel committed, and that the project's organisation structure and the roles and responsibilities of individual team members have been defined and communicated. All the team members must be familiar with the role of the team leader, be it a project manager, superintendent

or lead consultant. Strength of leadership will be a key ingredient of success in the project.

2.3.4 Design consultant responsibility checklist

The following checklist acknowledges the issues which design consultants themselves should address, and acts as a tool for checking the acceptability of the design brief from the principal:

- profitability of the principal's investment
- design consultant's accountability for capital cost expenditure and lifecycle costs within his or her discipline
- design team 'designs to costs' not 'costs the design'
- design consultant's involvement in value management studies
- cost reporting and level of information required, and the frequency of reports
- design consultant's involvement in final cost analysis and post-occupancy studies
- contract letting and analysis of competitive tenders
- design consultant's authority, that is, no authority to expend contingency sums
- design development and maintaining net to gross area ratios
- time management and programming of overall project development, design concepts, feasibility studies, budget manuals, contract letting, and working drawings
- control of design process and cost-checking procedures
- accuracy and responsibility for survey
- preparation of depreciable items list
- performance guarantees to be called up should budgets not be achieved
- liquidated or other damages for not achieving results
- contribution to innovative thinking at the design stage
- interdisciplinary co-ordination and integration
- monitoring of energy costs
- accurate design detailing, for example penetration sizes
- quality assurance/quality control
- monitoring of building approvals
- monitoring of other approvals including approvals for construction (temporary works) and intended use after completion
- responsibility for suitability for the purpose of the design.

2.3.5 Design consultant's services, conditions and fees

The variety of services offered by design consultants make it necessary to have a clear understanding about the particular services to be provided and the fees to be paid. There is no mandatory minimum scale of fees for services but as with any service, the principal usually only gets the quality of design service that is paid for.

The typical principal–design consultant agreement is less complex than most construction contracts but is nonetheless a binding contract. The documents in such an agreement may include:

- principal–design consultant agreement which identifies services to be provided and the basis of payment
- a schedule setting out the services to be provided in the stages of:
 - schematic design
 - preliminary design
 - final design
 - contract documentation
 - calling and reporting on tenders
 - administering the contract (the architect may or may not be involved in these stages)
- a schedule setting out the general conditions applicable to the engagement including:
 - design consultant’s responsibility and authority
 - principal’s responsibility
 - fee conditions
 - ownership of copyright
 - other conditions
- a schedule detailing the basis for payment with alternatives of:
 - percentage of cost of work
 - lump-sum fee
 - time charge
- payment for travelling expenses and disbursements.

While traditionally design consultants have been paid a percentage fee based on the total project cost, there is a growing argument in favour of a lump-sum fee. The cost of design will be independent from the cost of the project and can be easily monitored and controlled. Conditions of design consultants’ contracts should include design time and quality performance clauses, and where appropriate even a liquidated damages clause. The obligation of the design consultant to meet the stipulated performance requirements under the contract is binding. Failure to fulfil the obligation can give rise to a liability for damages, just as the general contractor can be liable for damages for non-performance.

When the project is to be constructed in New South Wales, the consultant agreement and any secondary consultant agreement will usually be a ‘construction contract’ within the meaning of the *Building and Construction Industry Security of Payment Act 1999*. At

the time of writing, similar legislation in other States is under consideration. An important effect of the Act is that the consultant is entitled to progress payments. If the consultant agreement does not make specific provision for the time for making progress payments, they can be made at 28-day intervals. Another important effect of the Act is that if, within ten business days of receiving a progress claim endorsed 'This is a claim under the *Building and Construction Industry Security of Payment Act 1999*', the other party to the consultant agreement does not serve upon the consultant a payment schedule, that party must pay the consultant the whole amount of the progress claim. For an analysis of the Act and its implications, see Davenport (2000).

2.3.6 Documenting the project

The purpose of producing design documentation is to secure development and building approvals and to provide enough information for contractors to price the designed facility and build it. Too much documentation wastes design resources; too little leads to ambiguity, requests for information (RFIs), variations, delays and disputes. Ideally, design documentation should be complete and accurate. However, this is rarely achieved because often insufficient time is set aside. The volume of work associated with co-ordination and integration of design activities is often underestimated, particularly in the area of services. To speed up design and documentation and to minimise the incidence of co-ordination and integration errors, principals often opt for deleting the design of some services from the tender documentation and replacing them with a provisional sum-cost item.

On fast-tracked projects, where design and construction activities overlap, the production of design documentation must keep ahead of construction activities. Design changes should be avoided as they may affect the already completed sections of the project. If proceeded with, they could have serious consequences for project cost and time.

Documents necessary to allow contractors to price a job adequately and to complete construction are different from those needed to establish a contractual business and administrative relationship between contracting parties. Preparation of these multitudinous documents by a variety of consultants can lead to conflicting information in different documents, missing information on 'grey' or overlapping areas and inappropriate conditions being imposed on the contracting parties due to reliance on 'standard documents'.

The five types of documents are:

- 1 legal: contract agreement and conditions of tendering
- 2 financial: tender, pricing schedules, bills of quantities
- 3 informative: survey, geotechnic, environmental, conditions of approval
- 4 instructions: drawings and specifications
- 5 administrative: general conditions of contract.

Those who prepare and use documents should not lose sight of what each document is for. They should look for compatibility of documents, clarity (including absence of ambiguity), equity of content, and identification and allocation of risks associated with the project. If this can be done, then administering the contracts should be easier and more effective.

2.4

TENDERING STAGE

Competitive tendering based on tender documentation continues to be the most common method of distributing construction contracts among the contractors and subcontractors willing to undertake the work.

Tender documentation is prepared by the design team and comprises:

- notice to tenderers
- conditions of tendering
- form of tender
- general conditions of contract to be used
- specification(s)
- drawings
- bill of quantities (if any)
- other relevant documents.

The quality of tenders is often said to depend on the length of time given to contractors and subcontractors for preparing tenders and the completeness of tender documentation. Other issues requiring attention are the method of tendering (whether open or select), the process of evaluating tenders and the method of selecting the winning bid. These issues will be discussed in detail in Chapter 9.

Until the principal forms a contract with the successful tenderer, the principal may still decide to abandon the project and cut the losses. However, once a main contract is formed, the principal is

committed to proceed to build the proposed facility. If the principal wants to reserve the right not to accept any tender, then the principal should expressly reserve this right in the conditions of tendering.

2.5

PRE-CONSTRUCTION STAGE

The pre-construction stage of the project lifecycle starts after the main contract has been awarded to the successful general contractor and usually ends when the date for site possession has been reached. It is a time set aside for the main contractor to organise the construction work and mobilise the necessary resources. In particular, the contractor will:

- prepare a detailed program of construction activities involving time and resources
- prepare detailed cost and quality management plans
- formulate a plan for managing the site
- develop a plan for site supervision
- assemble resources necessary to carry out the work including subcontractors
- establish a framework for managing information including the administration of contracts
- obtain necessary approvals from various public authorities and, where necessary, from owners or occupiers of neighbouring properties
- develop a control mechanism to ensure that the project is completed within the time and cost budgets, and to the required standards.

2.6

CONSTRUCTION STAGE

The construction stage begins when site possession is provided and ends when practical completion is achieved. The main contractor carries out the work in accordance with the contract documentation and the program. While the contractor retains overall responsibility for the execution of the work, the bulk of construction activities is usually performed by subcontractors. The main contractor's role is largely that of the co-ordinator and manager of the work performed by subcontractors.

Traditionally, the superintendent (commonly the main design consultant) administers the main contract between the principal and the contractor. The superintendent's role as contract administrator involves:

- representing the principal and looking after the interests of the principal
- conveying the principal's instructions to the contractor
- assessing claims made by the contractor (e.g. variation claims, time extension claims, and progress claims)
- issuing certificates approving payments and certifying practical completion
- determining issues or disputes arising between the principal and the contractor.

On the date of practical completion, determined by the superintendent, the principal takes legal possession of the completed facility, although the facility may not be fully completed and its services yet to be fully commissioned. The determination by the superintendent of disputes is usually subject to review by an arbitrator.

2.7

COMMISSIONING STAGE

The commissioning stage begins immediately after the date of practical completion and expires at the end of the defects liability period. It is a period during which the contractor fully completes the remaining construction tasks, rectifies any detected defects and ensures satisfactory functioning of various services. Upon practical completion the facility is at the risk of the principal. The principal takes legal possession of the facility and proceeds to:

- secure and insure the facility
- fit out the facility
- arrange contracts for maintenance of services
- monitor rectification of defects
- set a date for the opening of the facility
- finalise staffing arrangements or tenancy agreements
- obtain a certificate of compliance from the local planning authority
- finalise the contract with the main contractor.

The defects liability period commonly runs for three to six months. For mechanical services there is often a separate defects liability period of twelve months. At its expiry, the contract between the principal and the main contractor comes to an end, but that does not mean that either party is released from liability for failure to perform or complete any obligation under the contract. Liability for breach of contract may continue until extinguished by statute. This may be as long as six years or, in the case of a contract made by deed, twelve years after the end of the defects liability period. If arbitration or litigation is begun before liability has been extinguished, finalisation of liability may take even longer.

POST-OCCUPANCY EVALUATION (AUDIT)

The end of the commissioning stage provides an opportune time for the principal to assess the performance of the project in terms of its defined objectives and the project team members. This information will be invaluable in future decision-making.

A summary of important decisions and tasks across the entire project lifecycle is given in Table 2.1.

TABLE 2.1
DECISIONS AND TASKS IN THE PROJECT LIFECYCLE

STAGE	PURPOSE OF WORK AND DECISIONS TO BE MADE	TASKS TO BE DONE	PEOPLE INVOLVED
CONCEPT			
Definition of needs and scope	To define project objectives, prepare general outline of requirements and plan future action.	Set up principal's team, define objectives and formulate scope.	Principal, project manager, financier.
Strategic plan	An appraisal of alternatives to ensure functionality, technicality and financial feasibility of the project.	Carry out studies of user requirements, technical problems, planning, design and costs to reach decisions.	Principal, project manager, financier, legal consultant, other relevant consultants.
Brief	To develop a precise definition of project requirements from the functional, aesthetic, technical and economical point of view.	Prepare a written brief.	Principal, project manager, design consultant, other relevant consultants.
DESIGN AND DOCUMENTATION			
Scheme design	To determine general approach to layout, design and construction in order to obtain authoritative approval of the principal on the outline proposals and to obtain development approval.	Analyse brief. Carry out studies on user requirements, technical problems, planning, design and costs, as necessary to reach decisions. Develop design scheme. Prepare documentation for development application.	Principal, project manager, design consultants, quantity surveyor, other relevant consultants.

Preliminary design	To formalise design scheme and appraise buildability.	Appraisal of structural design. Development of spatial solutions and exterior design.	Principal, project manager, design consultants, quantity surveyor, other relevant consultants.
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BRIEF SHOULD NOT BE MODIFIED AFTER THIS POINT

Final design	To obtain final decision on every matter related to design, specification, construction and cost. Appraise buildability.	Full design of every part and component of project by collaboration of all concerned. Complete cost checking of design. Detailed value management appraisal.	Principal, project manager, design consultants, quantity surveyor, other relevant consultants.
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**ANY DESIGN CHANGE AFTER THIS POINT IS LIKELY WILL IMPACT
NEGATIVELY ON PROJECT OUTCOME**

Documentation	To prepare tender documents and make final detailed decisions to carry out the work. To obtain building approval.	Prepare drawings, specifications, bill of quantities and other tender documents. Seek building approval.	Principal, project manager, design consultants, quantity surveyor, other relevant consultants.
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TENDERING

Selection of main contractor.	Form of tender, tender invitation, conditions, submission, evaluation of bids, contract award.	Principal, project manager, main design consultant, quantity surveyor, tenderers.
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PRE-CONSTRUCTION

Programming the work, mobilisation of resources, site organisation, date for site possession.	Development of construction programs and schedules. Selection of subcontractors and suppliers. Formulation of cost and quality management plans. Procedure for administration of main contract.	Project manager, main design consultant, contractor, subcontractors.
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CONSTRUCTION

To construct the facility according to the contract documents.	Implementation of programs. Co-ordination and integration of subcontractors. Monitoring and control of progress. Administration of main contract and sub-contractors.	Principal, project manager, contractor, subcontractor, design consultants, other relevant consultants.
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COMMISSIONING

To hand over the facility to the principal for occupancy, remedy any defects, complete all work in accordance with the contract, and bring main contract to an end.	Date of practical completion, defects liability period, certificate of compliance, tenancy agreements, maintenance of plant, final certificate, contract finalised.	Principal, project manager, contractor, subcontractors, design consultants, other relevant consultants.
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POST-OCCUPANCY EVALUATION

To assess project performance against defined objectives.	Assessment of cost, time and quality performance.	Principal, project manager, other relevant consultants.
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CONTRACT STRATEGY

3.1

INTRODUCTION

The formulation of contract strategy is an important element of strategic planning. It involves making decisions on the most appropriate method of project delivery and contract price, the composition of a project team, and the conditions of contract under which the team members would operate. It also involves developing appropriate processes for the administration of contracts.

3.2

CONTRACT STRATEGY

In deciding what form of contract the principal should enter, the three issues of management of the project lifecycle, development of the design, and construction of the facility will need to be carefully considered. These issues will now be briefly discussed.

3.2.1 Management of the project lifecycle

Principals have a choice of either managing individual stages of the project lifecycle themselves or engaging suitable qualified and experienced consultants such as project managers. The choice is commonly related to the principal's skill and experience in managing projects, the type and the size of project, and the degree of risk involved.

While most government and large institutional principals such as finance and insurance firms have the necessary management expertise, they continue to rely on expert management services provided by a project manager, particularly on projects that are large and risky. Alternatively, they may entrust the design consultant, in addition to designing the facility, with acting as a contract administrator or superintendent in the construction stage. This practice is, however, becoming increasingly rare on large projects because principals tend to rely on the services of professional project managers. On very small projects such as residential buildings, the principal may even seek the management expertise from the contractor.

3.2.2 Design of the facility

Once a decision is made on 'management', the principal decides who to contract for design services. Since the design work may involve a number of specialist designers, the principal may either enter into one contract only with the 'main' or 'chief' designer, who in turn would form separate contracts with the other design specialists, or form separate contracts with individual specialist designers. The former approach is more common. Its main advantage for the principal is in the clear definition of responsibility for the design and its overall co-ordination and integration. The latter approach gives the principal more control over the selection and performance of individual design consultants. The principal must, however, nominate one of the designers to assume the role of a design leader to ensure effective co-ordination and integration of the design. Alternatively, the principal will appoint a project manager to lead the design team.

The number and the type of designers needed to fully design and document a construction facility depend on the size and the type of facility and the uniqueness and complexity of its design. A single-storey house can be fully designed and documented by an architect, while a hospital project may require the services of a number of specialist designers including:

- architect
- structural engineer
- services designers (electrical, hydraulics, mechanical, fire protection)
- environmental designer
- interior designer
- landscape designer
- specialist design consultants in the field of IT, security and fitouts.

In 'design and construct' contracts, the contractor becomes responsible for the design. The contractor has either in-house design capabilities or sublets the design work to design firms. This practice is increasingly popular on medium to large commercial and engineering projects. Design and construct contracts will be discussed in Chapter 6.

3.2.3 Construction

A contract to build a construction project may be awarded to one contractor, which is the most common practice, or to several contractors. The latter practice is associated with 'fast-tracking' (a process of overlapping design and construction) and may also be applied on projects where risks are such that a reasonable price cannot be formulated through a tender process. A project is then 'packaged' into several contracts, which are let concurrently or sequentially to separate contractors.

Where the principal proposes to 'package' the work to several contractors, it is common to appoint a construction manager to let the contracts (then called trade contracts or separate contracts) on behalf of the principal.

3.2.4 Formulating a contract strategy

Management, design and construction are the key elements of a contract strategy. It may well be that the principal will let one contract for all three elements or three separate contracts, one for each element, or the principal may choose any combination of those elements.

The decisions taken during the development of a contract strategy affect the responsibilities of those involved. They influence the control of design, construction and commissioning, and the entire co-ordination of the project lifecycle including its participants. They also allocate risk and define policies for risk management, as well as defining the extent of control transferred to contractors. Therefore they affect all of the crucial project objectives of cost, time and quality.

Apart from examining the issues of management, design and construction, reaching an appropriate contract strategy requires careful consideration of:

- the choice of a project delivery method
- the choice of a contract price
- how the contractor should be selected
- the choice of conditions of contract
- the allocation of risk to the parties through the contract documents.

These will be discussed in detail in the following chapters of the book. The remainder of this chapter will introduce the topic of ‘options for project delivery’.

3.3

PROJECT DELIVERY METHODS

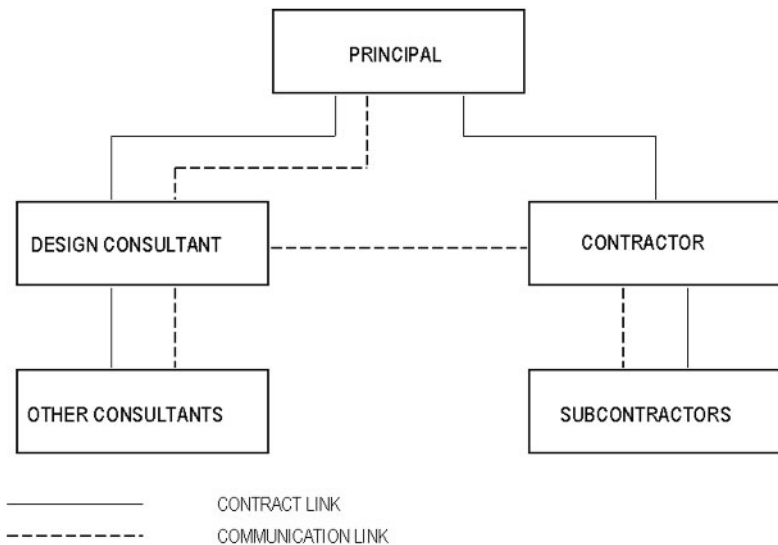
Many different terms are used to describe an organisation structure chosen for a particular construction project. These are commonly known as procurement, contractual or delivery methods, or options of project delivery. In this book, the terms ‘delivery methods’ and ‘options of project delivery’ will be used to describe project organisation structures.

3.3.1 Definition of delivery methods

Delivery methods are organisation structures that define a framework of contractual and communication links among project team members. Unlike corporate organisation structures that define the main functional and administrative units of a firm, project organisation structures define a hierarchy of the key project team members and give the contractual and communication links between them (see Figure 3.1).

FIGURE 3.1

A PROJECT ORGANISATION STRUCTURE



The principal is typically at the head of the organisation structure and is contractually linked with one or more key team members. These in turn may be contractually linked with other team members. Equally important is the definition of communication links through which individual contracts are executed. A project organisation structure thus provides a clear picture of how a project will be delivered by the selected team members throughout its lifecycle.

3.3.2 Emergence of alternative delivery methods

Until the 1960s, the choice of delivery methods was largely limited to three types:

- traditional
- design and construct
- in-house development.

The ‘traditional method’ was then and continues even today to be the most commonly used delivery method. It is characterised by bidding on full documentation with the contractor on a lump-sum contract. This delivery method will be discussed in detail in Chapter 5.

In order to establish a single point responsibility for design and construction, some principals opted for the ‘design and construct’ or D&C method, which requires the contractor to both design and construct a project. This method has become widely used in the construction industry. It will be examined in Chapter 6.

Some principals prefer to develop projects by using their own internal resources across the entire project lifecycle. This approach is commonly referred to as ‘in-house development’. Examples of ‘in-house development’ are individuals who buy the land on which they build their own house, or property developers who build housing estates on their own land for future sale. Once there were many government construction authorities with their own in-house workforce but increasingly government construction authorities have moved to using contractors.

The period up to the 1960s was characterised by economic prosperity, low inflation, low and stable interest rates, and industrial peace. The architect (or, in the case of civil works, the engineer) was then the undisputed leader of the project team. The principal would seek the architect’s professional advice on the feasibility, design, contractual and construction aspects of the project. The architect would normally design and document the

project, select the contractor through a tender process and then administer the contract as the principal's superintendent.

The contracts in use were generally lump-sum or schedule of rates, with no cost adjustments, which allocated most of the risks to the contractor. Although subcontracting was gaining in popularity, contractors continued to perform many trades with their own employees and apprentices. Contractors were then operating as master builders in the true sense.

Those were the days when most owners of the buildings, whether commercial or industrial, actually occupied them. The owner-occupier was more interested in the functional use of the building for the owner's purposes than in the rate of return on investment.

However, the rapid expansion of the Australian and most Western economies in the early 1970s, followed by a deep recession in the mid-1970s, had a dramatic effect on the construction industry. The periodic fluctuations in the level of investment and the dramatic increase in industrial disputation (particularly in Australia), together with spiralling inflationary pressures on the economy, contributed significantly to the emergence of other options of project delivery. Other factors responsible for the emergence of alternative delivery methods were the increasing complexity of project designs and the inability of some design consultants to effectively perform the role of superintendents under such adverse conditions. Some of these adverse factors will now be briefly examined.

Industrial conflict

The development boom in the early 1970s led to the strengthening of construction unions and to the emergence of industrial conflict in the Australian construction industry. The reasons for the industrial conflict were numerous, but the failure of contractors and major principals to adopt effective industrial relations practices is seen as the main one.

The rise of industrial conflict caused extensive delays and cost overruns in many construction projects. General contractors were able to pass the bulk of these delays and cost overruns to principals, due to the favourable contract conditions. The intensity and frequency of these claims for time and cost adjustments contributed to a serious contractual conflict between principals and general contractors. The traditional method of project delivery proved to be too inflexible to effectively address emerging contractual conflict. The reasons included long communication lines

and the inability of the general contractor to communicate effectively with the principal.

Inflation

When investing in construction projects, the principal aims to maximise return on invested capital. Consequently, the first consideration is the performance of the project in terms of cost and time. In an inflationary economy, the value of money in the future will be less than today. This has a significant impact on investment. The longer it takes to deliver the facility for its intended purpose, the greater the risk of higher labour and material costs. The main emphasis is thus on the speed of the entire project lifecycle. The traditional method of delivery may not always be able to meet such requirements because it relies on projects to be fully designed and documented before construction. Alternative delivery options that permit fast-tracking of the design and construction are preferred in economies exposed to a risk of inflation.

Complexity of projects

The construction industry is frequently criticised for falling behind the other sections of the economy in the areas of innovation, new technology and modern management practices. Perhaps the rate of change may have been slower, but the construction industry has moved forward and has developed the capacity to build highly sophisticated and complex projects all over the world. A dramatic change occurred in design technology, methods of construction, development of new materials, improvement of technical performance of construction plant, adoption of modern management practices, and embracement of information technology.

The present-day construction projects across the entire spectrum of the construction industry reflect the degree of change accomplished in the industry. Perhaps the most notable change is the increased complexity and the cost of building services, particularly the climate control services. The greater complexity of designs requires a highly disciplined approach to managing designs, particularly co-ordination and integration of design documentation that can best be provided through services of professional project managers. This is more likely to ensure that the design activities will be accomplished within the cost and time budgets, and without a serious risk of errors, omissions and ambiguities in the documentation. These are frequently the most common source of cost and time overruns.

Design consultants as contract administrators

In the traditional method of project delivery, the design consultant usually performs two distinct functions: (i) designs and documents the project and (ii) administers the main contract on behalf of the principal or, in other words, becomes a de facto project manager of the construction stage. Without a specialised training in contract administration and project management, however, design consultants cannot administer construction contracts effectively.

Alternative delivery methods that emerged throughout the 1970s and the early part of the 1980s are commonly referred to as 'managed' options of project delivery. They will be discussed in detail in Chapter 6. When first introduced, 'managed' delivery methods were expected to provide a quick fix to industry problems. Their structure implied teamwork, which was seen as critical to achieving better project outcomes. However, teamwork often failed to develop because of a highly adversarial industry culture. Where little or no teamwork was realised, 'managed' delivery methods generally failed to improve project outcomes.

The full potential of 'managed' delivery methods was realised much later with the introduction of processes such as total quality management and partnering, which helped to develop a new win-win industry culture and create a vehicle for developing teamwork.

3.3.3 Selection of delivery methods

The principal's problem is to choose the most appropriate delivery method for a particular project from a rather large array of delivery methods available. The following list of issues serves as a guide to selecting an appropriate delivery method. The selection is likely to be influenced by:

- 1 Standard practices adopted by the principal. Some principals may be reluctant to abandon a delivery method that worked well for them in the past.
- 2 The uniqueness of the contracting roles and responsibilities, which strongly influence the choice of an appropriate delivery method. For example, inclusion of a construction manager on the project team is likely to lead to the selection of construction management as a delivery method.
- 3 The degree of documentation available before contracts are entered into. With full documentation available, a traditional method of delivery may be the best alternative.
- 4 The degree of difficulty of arriving at a contract price. When full documentation is available and when the level of risk is low, a lump-sum price may be a

suitable option for a contract sum. Conversely, a cost-plus option may be a suitable alternative.

- 5 The lender's preference. The role of the lender in decision-making on a project should not be underestimated. When the risk is high, the lender may impose a particular option of project delivery which would best protect the lender's investment.

Options for contract price will be discussed next. Chapters 5, 6 and 7 will examine the pros and cons of the many options of project delivery open to the principal. Whatever delivery option is chosen for a project, the general principles of contract administration discussed in detail in Part 2 will be relevant and, unfortunately, no option is guaranteed to avoid claims and disputes. Part 3 is concerned with these problems.

OPTIONS FOR CONTRACT PRICE

4.1

INTRODUCTION

The decision made on the most appropriate option of project delivery will be closely followed by a decision on the most appropriate option for the contract price.

The price payable under the contract to members of a project team for specific work and services may either be pre-ascertained in the form of a lump sum or price rates, or determined when a project has been completed. The former approach is known as a fixed-price contract while the latter is usually cost-plus. These two options for a contract price will now be discussed in more detail.

There are other options that are used less often. In some forms of contract, for example BOOT, the price may depend on the earnings from the completed project or on a lease arrangement or another formula quite unrelated to the cost of construction. In these types of contract, there is usually no provision for progress payments for the construction work, and the contract price is often payable by the contractor to the principal.

4.2

FIXED-PRICE CONTRACTS

In fixed-price contracts a contract price for specific work and services is ascertained before any work is carried out. This price is

said to be fixed at the start of the contract but it may change during its execution if the contract conditions allow cost adjustment. The most common contract conditions that allow cost to be adjusted are variations, latent site conditions, rise and fall, provisional or prime cost items, and clauses for other risks beyond the control of the contract party claiming such cost adjustments. In this scenario, the original contract price will be different (generally less) than the final contract cost.

If the principal wants, for example, to fix the contract price of the main contractor for the entire contract period, the principal would need to delete from the contract any conditions that the contractor might otherwise use to claim for cost adjustments. The principal's intent is to shift the risk of cost overruns onto the contractor. This practice may be justified in some situations but only when:

- the project risk is very low
- the brief is complete
- the design documentation is accurate
- the principal will not make changes to the brief and the design
- the design consultants are competent.

While the principal may be able to draft a contract so that the contract price is indeed fixed for the entire project period, the principal may end up paying more for the work in the long run. This is because the contractor will estimate the likely cost of the risk of sustaining a fixed-price contract and will add it to the tender price in the form of a risk contingency. The problem for the principal is that the principal doesn't know the value of this risk contingency. If it is too high, the principal will clearly pay more for the work. If it is too low, the risk of the contractor's financial losses is likely to increase. This event would in turn increase the principal's risk of project cost overruns because in the effort to minimise the losses, the contractor would most likely:

- compromise the quality of the work
- force subcontractors on lower subcontract prices, which in turn will further increase the risk of achieving poor-quality work in addition to the possibility of subcontractors becoming insolvent
- delay payments to subcontractors and suppliers
- proceed to develop a claim against the principal.

Fixing a contract price for the entire contract period may not be in the principal's best interest. It is also worth noting that this practice is likely to lead to the development of an adversarial relationship between the parties to a contract.

Fixed-price contracts consist either of a single sum or the aggregate of various prices or rates in the form of a schedule prepared by the bidding general contractor or prepared by the principal and priced by the bidding contractor.

4.2.1 Lump-sum contracts

A lump-sum contract is the simplest form of contract. It fixes the price to be paid for carrying out the work, before the start of the contract. A lump-sum price should cover all costs, overheads, risk contingencies and profit.

Contractors and subcontractors are commonly required to bid for work on the basis of lump-sum tender prices. The preparation of a lump-sum price requires access to full project documentation including drawings, specifications and sometimes a bill of quantities. Contractors and subcontractors must ascertain the extent and the quantity of the work. They should assess the level of risk involved and price its likely impact in the form of a risk contingency.

The main benefit of a lump-sum price option is knowledge of the contract price in advance. However, this is of questionable value if derived from inaccurate and incomplete documentation since it might have to be adjusted for the cost of errors and omissions. It may also be of a questionable value if the project is exposed to a high level of risk, which contractors may find difficult to assess and accurately price in the risk contingency.

Although contractors appear to carry considerable risk under a lump-sum contract, the contract conditions may provide relief to contractors for risks that are beyond their control. Examples of such contract conditions are variations, latent site conditions, rise and fall, and provisional or prime cost items. Despite what the contract may say about variations, there cannot be an unlimited power for the principal to order variations. Variations must be reasonable, bearing in mind the nature of the contract. Although contractors will usually be compensated under the contract for variations, too many variation orders may delay progress and cause additional costs. This may trigger contractors' claims to recover such additional costs.

Since formulation of a lump-sum price is dependent on the availability and accuracy of full project documentation, sufficient time must be set aside for the accomplishment of the design stage. This requirement, however, tends to increase the overall project lifecycle period.

Lump-sum contracts are not restricted to the activities of contractors and subcontractors. Consultants such as project managers or even designers may be engaged on lump-sum contracts. The decision on whether or not to engage consultants on a lump-sum contract should be based on the extent and accuracy of the information available.

4.2.2 Schedule contracts

When the extent of the work (particularly quantities) is unknown even though full documentation is available, the contractor will often tender for the work using a schedule of prices/rates. For example, the quantity of excavated soil is often difficult to measure accurately without knowledge of the precise type of soil found on the site. In this case, the excavating contractor will tender on the basis of firm rates per cubic metre for the excavation of different types of soil. If awarded a contract, the contractor would be paid the sum calculated by application of the agreed schedule of prices/rates to the actual quantity of the excavated soil. In the case of excavation, it is important that the method of measurement of quantities is prescribed in the contract.

The terms 'schedule of rates' and 'schedule of prices' are used by different people to describe what are essentially the same schedule. In Australia, a schedule of prices or a schedule of rates may include estimated quantities of the work to be performed. A schedule of prices is sometimes in the form of a priced bill of quantities.

Schedule contracts are also fixed price contracts, with the price fixed at the start of the contract. Similarly to a lump-sum price, rates too may be adjusted for variations, latent site conditions, rise and fall, provisional or prime cost items and the like.

While it is possible to express the entire contract price in the form of schedule prices/rates, the most common approach is to combine schedule prices/rates and a lump-sum price.

The main limitation of schedule contracts is that the total cost of a project is unknown until the work is completed. Since the total project cost is calculated by applying schedule prices to the quantity of the work executed, regular auditing of the contractor's claims for payment is necessary for effective cost control.

In public sector engineering, schedule of rates contracts are used almost exclusively. It is common to provide a schedule setting out not only the items for which a rate is required but also estimates of quantities. Such a schedule is more accurately

described as a 'schedule of estimated quantities and rates' but it is more commonly described simply as a schedule of rates. In order to reduce the risk for both contractual parties, some standard conditions of contract stipulate agreed limits of accuracy for estimated quantities.

4.3

COST-PLUS CONTRACTS

Cost-plus contracts are used where the true nature or extent of the work are unknown and where the risk or contingency factor is high. If the contractor was to allow for everything that might eventuate, the contract sum could be too high. The price to be paid may, at the time of entering into the contract, be left out, and at completion be determined on the basis of the actual cost incurred. Although the contract will have no contract price in the usual sense, it is most important that the basis for determining the 'cost' and the 'plus' is prescribed in the contract.

'Cost' in cost-plus contracts usually comprises direct cost to the contractor of materials and labour. These 'cost' items constitute no risk to the contractor if they are to be fully reimbursed by the principal. 'Plus' is the contractor's bid price, which includes contractor's overhead and profit. The cost of preliminary items, which includes supervision, plant and equipment, statutory costs and insurances if carried by the contractor, may be part of either 'cost' or 'plus'.

The 'plus' can be a lump sum or a rate (e.g. a percentage of the 'cost') or a combination of both. A lump sum alone is usually only appropriate in small projects where the limits of the project in terms of cost and time can be fixed. Sometimes the contractor's 'plus' is based on performance criteria. For example, if the total cost of the project is less than an agreed target price, the contractor will be paid a bonus and if it is greater than the target price, the contractor's remuneration will be less.

Sometimes, particularly in the case of construction management contracts, the cost may be the cost of subcontracting the whole of the design and construction. Usually 'cost' is defined to exclude costs arising from contingencies that are the contractor's risk, for example claims by third parties, damages payable to the principal, subcontractors or others on account of defaults of the contractor, and the cost of making good the contractor's defective design or workmanship.

One distinct advantage of cost-plus contracts is that construction can begin on site before design work is complete and without the usual preliminary arrangements. It also avoids most arguments over variations.

Cost-plus contracts may be used in conjunction with the traditional method of delivery, but their main application is in 'managed' delivery methods.

In the traditional method of project delivery, contractors compete for work through a tender process. When the principal decides to award the main contract on a cost-plus basis, because of the unknown nature and extent of the work, the main selection criterion is the tender price or the fee (usually called a management fee), which includes overheads, profit and possibly the cost of preliminary items. The cost-plus contract will be formed between the principal and the contractor while subcontracts will usually be fixed-price. The winning contractor will be paid the fee and will be reimbursed for 'cost'.

From the operational point of view, the contractor may initially pay for all the costs as they occur. The contractor will then invoice those costs on a monthly basis to the principal who, after verifying their accuracy, will reimburse the contractor in full. The principal will pay the agreed portion of the fee to the contractor also on a monthly basis. So that the contractor will need the least possible capital to run the project, the contractor will usually invoice the principal before actually paying subcontractors and will negotiate terms of subcontract that make the time for payment of subcontractors after the date on which the principal must pay the contractor.

Since the contractor's risk in cost-plus contracts is very low, the principal needs to be aware of the possibility of the contractor's complacency, which could have a detrimental effect on the contract performance. In choosing to use a cost-plus contract in combination with the traditional method of project delivery, the principal should:

- select tendering only
- apply, apart from the tender price, other selection criteria such the contractor's reputation, quality and quantity of resources both human and physical, financial strength, and the like
- engage a quantity surveyor or another suitably qualified consultant to monitor the contractor's claims for 'cost'
- consider inclusion in the contract of incentives for the contractor to keep costs low and expedite completion.

4.3.1 A fixed fee

The principal and the contractor agree on a fee figure to cover the contractor's off-site overhead, profit and sometimes the cost of preliminary items and on-site overheads. A fixed fee is usually expressed as a lump sum.

A fixed fee remains constant even when costs vary. The contractor does not profit by increased expenditure unless the nature of the work is substantially altered, which could provide the grounds for renegotiation of the fee. The risk with this arrangement is that the lump sum for the fee must be fixed with a particular quantity of work and time in mind. If the actual quantity of work or the actual time proves to be different from that on which the lump-sum fee was based, the principal may be liable to pay extra.

The contractor's incentive is to do the work quickly and in accordance with the drawings and specification in order to:

- reduce the proportion of overheads, which are a factor of the duration of the project
- satisfy the principal and the principal's representative so as to increase the prospects for future work.

The risk can be reduced for both parties by including in the contract agreed limits of cost and time beyond which the lump sum will not apply.

4.3.2 A percentage fee

When the project period is difficult to estimate, the contractor's fee may be expressed as a percentage of the actual project cost. Under this arrangement the contractor's risk is further reduced.

The contractor may be seen as profiting from increased expenditure, since the contractor's fee rises when project costs rise. Consequently, the principal must either put in place incentives for the contractor to perform (see the next section) or carefully monitor the contractor's performance. A cost-plus percentage fee contract can only be satisfactory if the contractor is selected for integrity, ability and financial stability.

4.3.3 A fixed fee/percentage fee plus a bonus or penalty

This type of arrangement is used to offer incentives to the contractor to facilitate better performance and to keep the project cost and time within the overall budgets.

In theory, this arrangement appears to be simple and easy to

implement. The contractor will be paid as a bonus an agreed percentage of the saving, if the saving was realised. Conversely, if the final cost is higher than the agreed estimate (also known as a 'target price' or a 'guaranteed maximum'), the contractor would incur a 'penalty' by having the fee reduced accordingly. However, in practice this concept is often difficult to make work. The main problem lies in the difficulty of agreeing on the value of the guaranteed maximum price at the start of the project when only limited design information is available. If the guaranteed maximum price is overstated and the contractor is bound to earn a substantial profit, the principal may question its accuracy and relevance as a benchmark for assessing the contractor's portion of the bonus. Conversely, if it is understated, the contractor would undoubtedly take defensive action to avoid the payment of a 'penalty' for overrunning on cost.

If the actions of the principal cause the contractor to fail to qualify for a bonus, the contractor may have a claim for breach of contract and the measure of damages may be the lost bonus. Therefore a contract provision for a bonus is only efficient where there is very little risk of interference by the principal with the work or progress.

THE TRADITIONAL METHOD OF PROJECT DELIVERY

5.1

INTRODUCTION

Project delivery methods are specifically designed organisation structures for delivering construction projects within cost and time budgets. They define contractual links among the key project team members and the flow of information within the hierarchical management structure. Methods vary and their nature is determined by the roles played by the project team members, the relationships between them, the timing of events, as well as the formal general conditions of contract used.

In this chapter, the traditional method of project delivery will be examined. The word ‘traditional’ points to the universal acceptance of this method over a long period of time. The method is well known, its structure is clearly defined, and the roles and responsibilities of individual project team members are understood.

5.2

NATURE OF THE TRADITIONAL METHOD

The principal, the design consultant and the contractor are the three main parties that form the structure of the traditional delivery method. The principal selects the main design consultant to

design and document the project. Using a competitive tender process, the principal then selects a contractor and enters into a formal contract (the main contract) with that contractor to build the facility as designed. The contract price paid to the contractor may be in the form of a lump sum, a schedule of prices, or a mixture of both. It may even be, wholly or in part, cost-plus. For detailed information on different options for the contract price, refer to Chapter 4.

5.3

ORGANISATION STRUCTURE OF THE TRADITIONAL METHOD

A typical structure of the traditional method of project delivery is given in Figure 5.1. It shows the hierarchy of the management structure, contractual links formed between project team members and the lines of communication. It is worth noting that the project manager is not involved in the traditional method. But it doesn't mean that the traditional method does not require project management services. These are provided by the principal up till the start of the construction stage, after which the design consultant assumes the responsibility for administering the construction contract. Inexperienced principals may seek advice from specialist consultants such as project managers in conceiving the project and developing the design, but apart from assisting the principal, they are not part of the traditional organisation structure.

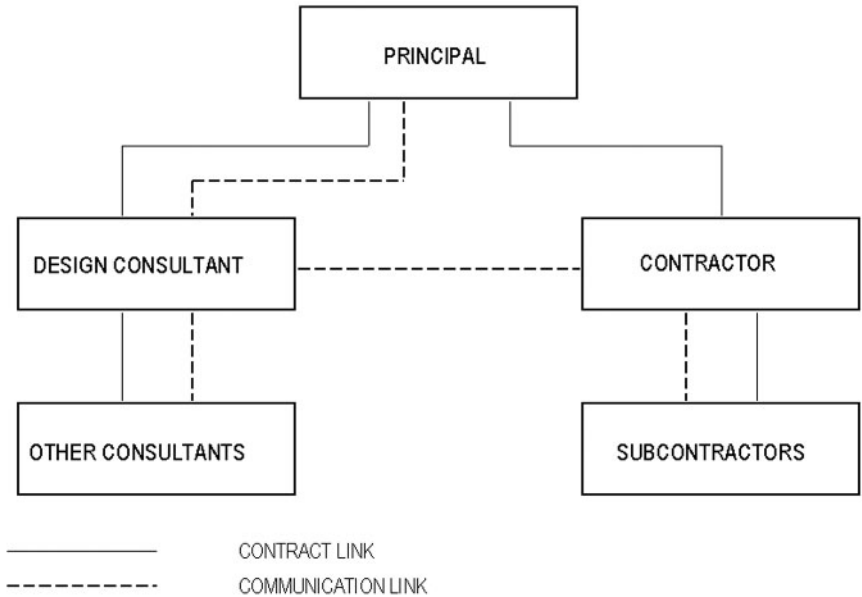
5.3.1 Contract between the principal and the design consultant

The first contract formed is that between the principal and the design consultant. The design consultant is commonly required to design the project, provide estimates of cost, facilitate production and co-ordination of design documentation, prepare tender documentation, administer the tender process, recommend to the principal selection of the best contractor and any nominated sub-contractors, and administer the main contract formed between the principal and the contractor.

The design consultant acts in an independent role and offers impartial advice to the principal on technical and financial matters as well as on matters concerning the contractor. In addition to producing the best design solution, which requires competence as a designer, the design consultant has to be an efficient manager

FIGURE 5.1

THE TRADITIONAL METHOD OF PROJECT DELIVERY



and co-ordinator of activities of other members of the design team, such as the structural engineer and specialist designers. Ideally, the design consultant should be engaged in the conceptual stage of the project lifecycle to assist in developing a project brief.

The design consultant will advise the principal on the most suitable contract conditions and the procedure for selecting a contractor. This will involve drafting tender conditions, recommending how the tender process should be carried out, evaluating tenders and recommending a winning tenderer. The design consultant will also make a recommendation on the selection of nominated subcontractors.

Design of a large facility involves a number of specialist designers, including architect, structural engineer, services engineers, interior and landscape architects, and any other required specialist designers. The principal commonly forms a contract with one of such design firms, which becomes the main design consultant. The main design consultant will then enter into separate contracts with the other required design consultants. The overall responsibility for the development of the design, and the production and co-ordination of the necessary documentation, lies with the main design consultant.

5.3.2 Contract between the principal and the contractor

A contract between the principal and the contractor is referred to as the 'main' or 'head' contract. The contractor undertakes to fulfil all the obligations under the contract, namely to build the facility within the agreed cost and time budgets, and to the required quality standards.

Figure 5.1 shows that the contractor has a communication link with the design consultant but not with the principal. This is characteristic of the traditional method. After the award of the main contract to the contractor, the design consultant assumes the responsibility for administering the main contract on behalf of the principal. The design consultant becomes the principal's agent with the authority to give directions, assess and certify the contractor's claims, and resolve issues. Things done and directions given by the design consultant as the agent of the principal bind the principal just as if done by the principal. Generally speaking, a claim cannot be made against the agent for acts performed as agent of the principal but must be made against the principal.

It is worth noting that in performing the role of superintendent in the construction stage, the design consultant may appear to be exposed to potential conflict of interest. In administering the main contract as superintendent, the design consultant is sometimes required to be unbiased and impartial in decision-making, for example in certifying extensions of time or the value of work or deciding disputes. As the principal's agent, the design consultant is also required to act in the best interest of the principal, but where the principal has given the superintendent the role of an independent certifier, the best interests of the principal require the superintendent to act independently without bias or partiality. Consequently, the superintendent who acts in accordance with the role allocated will never have the apparent conflict of interests. Rejection of the contractor's claims by the design consultant when such claims should have been certified would be seen by the contractor as a sign of favouritism for the principal and may trigger the contractor's action against the principal or, in some instances, against the design consultant. In the opposite case, the principal may argue that the design consultant is not acting in the principal's best interest and may have a claim against the design consultant for breach of the terms of the consultancy engagement.

The design consultant as a contract superintendent performs a difficult but important role in administering the main contract. The

principal needs to ensure that only a highly experienced and reputable design firm is selected for this task. The principal must bear in mind that the design consultant is not expected to provide legal advice. There will be instances where the design consultant will not know the answer to a contractual problem, for example whether a certain instruction will place the principal in breach of contract or create a liability, perhaps to pay for a variation. In such instances, the design consultant can only point out the risks involved and it is up to the principal to decide, perhaps after taking legal advice, which course the principal requires the superintendent to take.

5.3.3 Contracts between the contractor and subcontractors

While the contractor is contracted to build the facility, the bulk of the construction work is usually performed by subcontractors, sometimes referred to also as 'specialist contractors'. The contractor breaks the project down into specific trade packages, which the contractor lets to different subcontractors, usually in the form of lump-sum prices. The contractor's role is that of the manager of construction activities, which the contractor performs through programming and budgeting, careful resource allocation, co-ordination of activities of subcontractors, and control of the production process.

All subcontractors, including nominated subcontractors (the differences between ordinary and nominated subcontractors will be discussed in Chapter 10), are contracted to the contractor. Apart from being selected by the principal on advice from the design consultant, nominated subcontractors do not enjoy special privileges. The exception is sometimes direct payment by the principal.

By subcontracting, the contractor does not escape liability to the principal. The contractor is usually liable for the acts or omissions of a subcontractor as if committed by the contractor.

5.4

ADVANTAGES TO THE PRINCIPAL

The traditional method of project delivery promises a number of distinct advantages to the principal. A brief summary of potential advantages is given below:

- The completion of plans and specifications before the award of the main contract allows the principal and the contractor to make a fairly accurate estimate of the cost and construction time of the facility.

- Because sufficient time has been provided before construction for the development of design and the production of documentation, the risk associated with design changes (variation orders) is expected to be low.
- The principal's financial risk associated with the construction stage is relatively low since the contractor assumes most of the risk.
- The availability of full documentation and the responsibility of the design consultant to administer the contract is expected to ensure the highest level of quality control.
- A contractor can be selected competitively from a large pool of experienced contractors.

5.5

DISADVANTAGES TO THE PRINCIPAL

The major disadvantage of the traditional method is that construction generally cannot start until the project is fully designed and documented. This extends the period of the whole project and increases the vulnerability of the principal to financial risk through inflationary and interest rate movements.

Other potential disadvantages of the traditional method are:

- the lack of the contractor's technological and management expertise and input into those aspects of the design involving construction
- the possibility of errors and discrepancies in contract documents that an unscrupulous contractor might exploit to the disadvantage of the principal
- the difficulty in formulating a fair and equitable contract price adjustment formula (Cook 1979)
- a high cost of tendering. The tender cost may be as high as 3.5 per cent of the tender price (Cordell 1980).

5.6

TRADITIONAL CONTRACT STRATEGY

The optimum or best contract strategy for projects procured using the traditional method of project delivery was defined by NPWC/NBCC (1990: 14). The strategy requires the following requirements to be satisfied or substantially satisfied:

- The optimum design for the project is established without involving the prospective general contractor or subcontractors. This is conditional on the design team having broad site experience in availability of resources and knowledge of buildability, industrial relations and safety aspects. If this is not available, the principal should appoint a consultant with construction knowledge on a fee basis.

- The principal manages the interface between the detailed design/documentation and construction, and selects and engages the consultants, who are directly responsible to the principal.
- The principal requires the consultants to provide advice and monitoring of the project through the design, documentation and construction stages.
- The time available for the project is such that the detailed design of the project is completed or may be substantially completed before construction commences.
- Few variations to the project design are expected to be required during construction.

5.7

STANDARD FORMS OF GENERAL CONDITIONS OF CONTRACT FOR USE WITH THE TRADITIONAL METHOD OF PROJECT DELIVERY

One particular advantage of using the traditional method of project delivery is that this method is well supported, at least in Australia, by a wide range of standard conditions of contract. The benefit of using standard forms is that they have already, over many years, been subjected to close scrutiny by lawyers, courts and the contracting parties themselves, with the result that most uncertainties have been systematically removed.

In Australia alone, there are many 'standard forms' of general conditions of contract and subcontract published by different industry and government bodies, corporations, consultants, solicitors and others. More and more are being published. Rather than a move towards uniformity, the stampede is the other way. For the purposes of this book, AS2124 general conditions of contract have been selected as a benchmark. The detailed analysis of conditions of contract will be made in Chapter 12.

5.7.1 Selection of general conditions of contract

While standard forms of general conditions of contract offer the benefit of greater certainty of the meaning of the conditions, their main drawback is that they tend to cover all possible contingencies across all project types and may not be totally applicable to a particular project. This leads to minor or major modifications of some contract conditions, the down side of which is that these modifications may unintentionally alter the meaning of the contract.

The legal profession considers standard forms of conditions of construction contracts to be less than adequate. Duncan Wallace (1979) expresses this sentiment:

In considering the standard forms of contracts don't expect too much. Be filled with the healthiest disrespect, accept it that the provisions are not going to give the right answer, expect them to be confusing and conflicting and do not waste time wrapping towels around your head thinking that this sacred document has the answer because very, very often it won't.

Important issues to be considered in selecting the most appropriate general conditions of contract are the method of project delivery, the participants, the type and size of the project, and the manner in which the contract sum is expressed.

5.7.2 Selection of general conditions of subcontract

While considerable attention has been given over the years to the development of standard general conditions of contract for the contractual relationship between the principal and the general contractor, the choice of standard conditions of subcontract has in the past been rather limited. This is surprising considering that the bulk of construction work is carried out by subcontractors and for one main contract there may be well more than a hundred subcontracts. NPWC/NBCC (1990) amplifies this imbalance and argues for a close alignment and compatibility between the general conditions of the main contract and the general conditions of the subcontract. Excellent examples of compatibility between the general conditions of main contract and subcontracts is the family of AS2124 contracts.

The lack of a wider range of the general conditions of subcontract is probably a less significant problem than the reluctance of general contractors to use standard conditions of subcontract. Most general contractors prefer to use their own, in-house drafted subcontract conditions to reflect more realistically the unique features of individual subcontract agreements (Uher 1990c). They are rarely aligned with the philosophy of the conditions of the main contract. Subcontractors generally regard such forms of subcontract conditions as unfair and onerous. They view them as a serious risk, which they price accordingly (Uher 1990c). For a more detailed discussion of subcontracting, please refer to Chapter 10.

NON-TRADITIONAL METHODS OF PROJECT DELIVERY

6.1

INTRODUCTION

For the purpose of this book, the ‘non-traditional method’ means a method of project delivery that is different from the traditional method. It implies a departure from the ‘traditional’ triangular contractual relationship involving the principal, design consultant and the contractor in favour of more effective management of each of the individual stages of the project lifecycle and the project as a whole.

An important characteristic of non-traditional delivery methods is their reliance on fast-tracking, which means overlapping of the design and construction stages to speed up a project. As well as facilitating faster work, fast-tracking also prevents the formulation of a contract price as one lump sum, and imposes a greater risk of potential design co-ordination and integration problems. These two features of fast-tracking may appear to have an adverse effect on the project, but in reality they are just two factors that effective project management can deal with.

This chapter will examine a number of non-traditional methods of project delivery. They are grouped as:

- design and construct or D&C method
- managed methods, namely construction management and project management

- in-house development method
- concessional or PFI (private funding initiatives) methods.

6.2

DESIGN AND CONSTRUCT METHOD

A design and construct method is also referred to as a package deal or a turnkey method. It gives the contractor the responsibility for both the design and construction. The contractor may be a company with capacity to design and construct or a joint venture comprising a construction contractor and a design firm. Alternatively, the contractor may subcontract the design to design consultants.

6.2.1 Organisation structure of the D&C method

A typical organisation structure of the D&C method of project delivery is given in Figure 6.1. It shows a simple hierarchical management structure with contractual links formed between project team members and the lines of communication.

The principal's position at the head of the structure makes the principal a de facto project manager. If required, the principal may engage services of a specialist consultant (referred to in some conditions of contract as superintendent) to act as the principal's agent in much the same manner as the superintendent's role defined under the traditional method. This approach may, however, extend the lines of communication and isolate the principal from the day-to-day affairs of the project. Considering that D&C projects are expected to be fast-tracked, direct involvement of the principal in the project is essential. Experienced principals have no reason to engage independent superintendents since they have the necessary expertise in-house. Inexperienced principals should consider using the traditional method.

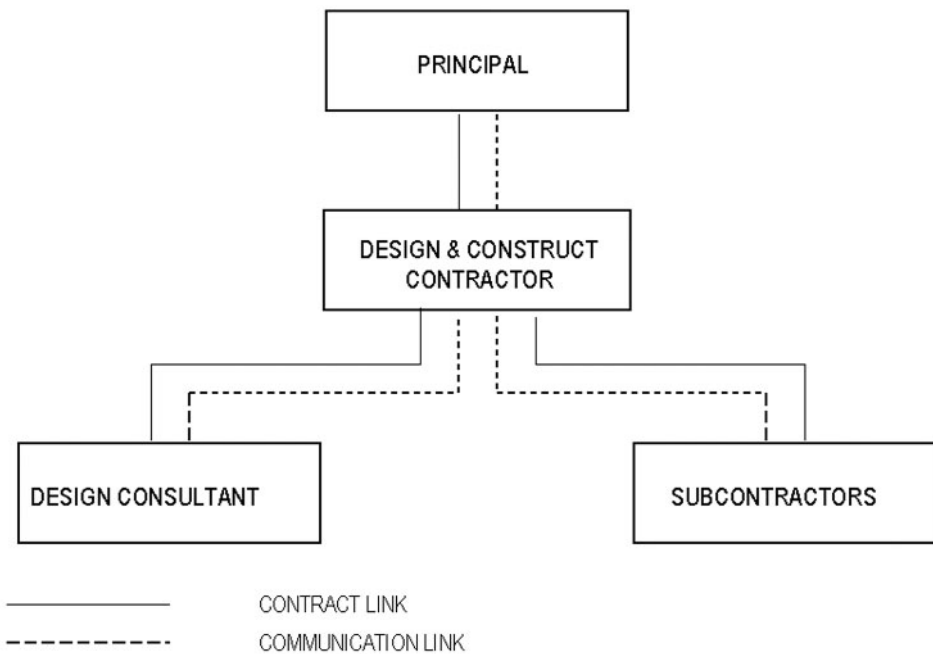
6.2.1.1 A contract between the principal and the contractor

The principal forms a contract with the contractor to design and construct the facility. The principal intends the contractor to be a single-point responsibility for delivering the project.

In any contract there is some design to be done by the contractor, even if it is only design of the temporary works or deciding whether to put a nail here or there. In what is generally classified as a D&C contract, it is only the quantity of design work to be carried out by the contractor that is greater. There is no generally

FIGURE 6.1

THE DESIGN AND CONSTRUCT METHOD OF PROJECT DELIVERY



accepted definition of ‘design’ that distinguishes a ‘D&C contract’ from any other type of contract.

It may appear that the contractor carries the entire project risk. However, the contractor’s risk under D&C is probably not as high as under the traditional method of delivery where the contractor is paid a lump sum, because of the contractor’s substantial involvement in the design. The risk is further reduced if the contract includes a provision for rise and fall (for the definition of ‘rise and fall’, see Chapter 12, section 12.9.2).

The principal’s risk in the D&C method of delivery is not as low as it might seem. This is mainly because the principal becomes a de facto project manager. In the absence of an independent management consultant in the typical organisation structure of the D&C, the principal is the sole provider of information to the contractor. The crucial element of information transfer is a project brief for which the principal is fully responsible. Errors, ambiguities or changes to the brief made by the principal will seriously increase the principal’s financial risk.

Another risk the principal may face under the D&C contract is

related to prior approval of the contractor's design drawings, specifications or samples. If the principal reserves the right of prior approval of the contractor's drawings, etc., the principal's approval, refusal to approve, failure to disapprove or delay in approving may result in a variation, a claim for delay costs, a waiver or another claim by the contractor. When a building or some part or fitting proves to be defective or not suitable for its purpose, the defence most often raised by a D&C contractor is that the principal gave prior approval to the relevant drawing, specification or sample.

It is common to find in a D&C contract clauses stating that the principal's approval will not relieve the contractor of responsibility, but these clauses do not solve the problem. Approval can be construed as misleading conduct, which can give the contractor rights outside the contract, for example in tort or under statute (e.g. s. 52 of the *Trade Practices Act 1974*).

The answer is not to require drawings to be produced for approval but simply to require that, before the contractor intends to use any drawing, the contractor must give a copy to the principal. The principal will then have an opportunity to order a variation or to object that the drawing is not in accordance with the contract. It is important that it is expressly stated in the D&C contract that the principal is not required to inspect the contractor's drawings or to notify the contractor of any error or departure from the requirements of the contract, and that failure of the principal to comment on the drawings or any particular item in them must not be taken as a waiver of any requirement of the contract. The principal must be careful not to indicate expressly or by implication from conduct that a drawing is suitable for use.

A D&C contract can be tendered or negotiated. In both cases it may be difficult to estimate the contract price accurately because of a lack of documentation. The contractor would naturally include a contingency, which could be either too high or too low. Neither scenario is favourable to the principal as the project cost would most likely increase from either a direct or indirect impact of the risk contingency (Smith et al. 1975).

Because fast-tracking is an important feature of the D&C method, the use of tendering to select a D&C contractor, which would substantially lengthen the time-frame of the project, should be seriously questioned. A more logical alternative is negotiation leading to agreement on a contract price in the form of cost-plus with guaranteed maximum (see Chapter 4 for more

information). In this case it is necessary to ensure that the general conditions of contract do not provide for 'risk sharing'.

If, however, the principal is compelled to call for tenders in the form of a lump sum, the principal would need to set aside a considerable time for the tender period to enable the bidding contractors to develop, document and price their designs. The principal would also need more time to assess different tender submissions, since each of them may be based on an entirely different design philosophy. The principal might still achieve a successful project outcome provided that a substantially longer time is offset by a lower overall cost. A process of 'novation' may satisfy the principal's need to use a tender system without a substantial loss of time. Novation will be discussed later in the chapter.

Perhaps the element most frequently overlooked in the D&C contract is 'suitability for purpose'. It is important that the contract states the purpose of the works and that the contractor is responsible for the effectiveness of the design and its suitability for its purpose. It is possible to have a facility designed in accordance with the contract and all relevant codes and yet for it to be quite unsuitable for its intended purpose. If the contractor is not to be responsible for producing a facility that is suitable for a specific purpose, then for the protection of the contractor it is equally important to state that the contractor is not responsible for 'suitability for purpose'.

A D&C contract should include a statement that the principal is or is not, as the case may be, relying on the contractor's knowledge, skill and judgement to produce a finished product which is fit for its intended purpose. The 'suitability for purpose' aspect of D&C contracts has often given rise to litigation.

In its manual, the NSW Department of Public Works and Services requires D&C contracts to include the following:

Notwithstanding that the principal or superintendent or any other employee or agent of either has been given copies of the conceptual design, design development or documentation (including construction documents), the responsibility for the design, design development and documentation and their integrity, effectiveness and suitability for the purpose rests with the contractor. The principal is relying upon the contractor's knowledge, skill and judgement to produce a finished product which is fit for its intended purpose.

The next paragraph in the manual requires the contractor to complete the works 'in all respects suitable for use on the site as ... and complete in all aspects ready for use'.

6.2.1.2 Contract between the contractor and the design consultant (if any)

If the contractor's in-house design capability is inadequate for the project, the contractor would need to contract out design services to suitable design consulting firms for a fee. Design consultants would be required to design and document the facility strictly in accordance with the principal's brief and the contractor's specification. The contractor would retain the responsibility for the overall design co-ordination and integration.

Fast-tracking is an important aspect of the D&C method and to capitalise on it, the contractor would break up the development of the design into carefully defined sequential packages. The contractor would then let these to subcontractors or even separate contractors.

The frequent criticism of the D&C method is that it compels the designer to work within an overly planned and disciplined environment controlled by the contractor, which restricts the designer's creativity and leads to poor-quality designs. This may be true in some cases, as evident from examples of low-quality projects built particularly in the 1960s and 1970s. However, the principal can minimise this problem by engaging an independent consultant to monitor design and construction activities and generally look after the principal's interests. To ensure the contractor's co-operation, the principal may stipulate the role of such an independent consultant (referred to as superintendent in some contracts) in the D&C contract.

6.2.1.3 Contract between the contractor and subcontractors

As is the case in the traditional method of project delivery, in the D&C method the contractor's role in the construction stage is that of a co-ordinator and manager of construction activities performed by subcontractors.

Since the design work will most likely be packaged, the contractor will let individual packages, usually on lump-sum prices, to selected subcontractors or, in the case of larger packages, to separate contractors.

6.2.2 'Novated' method of project delivery

'Novation' is a variation of a D&C method. In broad terms, it refers to the transfer of the design ownership and the responsibility for the design from one party to the other.

A 'novated' option is highly suitable in applications where the principal wants to maintain some degree of control over the

design while at the same time benefiting from a D&C method. This is particularly useful when the principal intends to select a contractor using a tender system.

Under novation, the principal enters a contract or contracts with designers or suppliers or specialist subcontractors who develop a conceptual design for the facility. The principal makes this conceptual design available to the bidding contractors for the purpose of tendering. With the award of the contract to the winning main contractor, the principal also assigns or 'novates' the design contracts that have been let earlier to the main contractor. The main contractor accepts the designers, suppliers or specialist subcontractors as subcontractors to the main contractor, who then becomes responsible for the design and construction of the facility. The arrangement is the same as contemplated in AS2124 general conditions of contract with respect to 'designated subcontractors' (see Chapters 11 and 12). Davenport (1993b) comments on the potential benefits and problems associated with novation and gives precedents for novation clauses.

6.2.3 Standard conditions for D&C contracts

The difference between the general conditions needed for a traditional and a D&C contract is so slight that there is no real need to have a different set of conditions. For example, the NSW Department of Public Works and Services uses AS2124-1986 conditions of contract (developed mainly for use with the traditional method of delivery) for D&C contracts. The Department's new conditions, C21, are used for both traditional and D&C contracts.

Design is work. It is work to be described in the specification, not in the general conditions of contract. It fits into the definition of 'work' in all commonly used forms of contract. In trying to redraft general conditions, the drafter frequently gets bogged down in the detail and overlooks the essentials of specifying the design responsibility. Standards Australia published *AS4300-1995: General Conditions of Contract* (AS 1995) for D&C contracts. It is interesting to note that the word 'design' is not even defined in the document.

Although mainly drafted for use with the traditional method of project delivery, AS2124-1986 is suitable for use in a D&C contract. To ensure that it is suitable, the following clauses might be deleted: cl. 12 (latent site conditions); cl. 14.2 (variations to the Temporary Works as a result of a change in the law); the second paragraph of cl. 14.3 (fees to authorities); cl. 16.3 (defects in

design as an excepted risk); and paragraphs (ii), (iii) and (viii) of cl. 35.5 (grounds for an extension of time). Ownership of copyright in documents, designs and computer programs should also be considered.

Extensions of time are a constant source of problems. In a D&C contract a way around the problem may be to have two separate prices, one for the works if they reach practical completion by a certain date, another if they reach practical completion after that date. The law does not permit a contract to impose a penalty. Therefore it is not possible to validly provide that if the contractor fails to reach practical completion by a certain date then the contractor will forfeit \$1 million. It is possible to validly provide that if the contractor does reach practical completion by that date, the principal will pay the contractor an extra \$1 million. The final result is the same. Failure to achieve practical completion by the specified date will cost the contractor \$1 million. The law, however, is not concerned with the result but only with the words used.

Liquidated damages of a certain amount per day of delay can also be imposed. However, sometimes there is a particular date that is very important to achieve, and a daily amount for liquidated damages does not serve the same purpose as a substantial bonus. There is no need for an extension of time clause if the principal is absolutely sure that the principal will not delay the contractor. The contractor can be required to accept the risk of all delays except those caused by the principal or persons for whom the principal is responsible.

It may also be pertinent to limit the right of the contractor to extensions of time for carrying out the design work and for delays in construction as a consequence of or arising out of delay in the work of design. The right to extensions of time might be restricted to events for which the principal is responsible. The reason for this is the difficulty of determining whether a delay in design work has occurred and in measuring the delay. The NSW Department of Public Works and Services includes the following provision in D&C contracts:

Except where the cause of a delay is a cause described in Clause 35.5(b) (i),(iv), (vi) or (ix) of (AS2124), notwithstanding anything in clause 35.5 of (AS2124) the Contractor shall not be entitled to any extension of time in respect of:

- (i) any delay to the conceptual design, design development and documentation work;
- (ii) any delay to construction work as a consequence of or arising out of conceptual design, design development and documentation.

The most common cause of cost overruns in D&C contracts is variations. What is or is not a variation often causes arguments in D&C contracts. There is a risk that in approving a design suggestion from the contractor, the principal or the superintendent may be taken to have approved of a variation. The NSW Department of Public Works and Services addresses this problem with the following clause:

Notwithstanding any other provision of the Contract, and in particular Clauses 35.5 (extension of time) and 40 (variations) of the General Conditions, the approval of the Principal or the Superintendent to anything or the failure to disapprove of anything shall not be taken to be a variation or a ground for extension of time.

The Contractor shall be entitled to recompense (under Clause 40.2 or otherwise) for a variation if and only if both (a) and (b) or (a) and (c) exist:

(a) the Superintendent has directed in writing the Contractor to:

- (i) do extra work; or
- (ii) provide something,

which is different from and out of character with what might reasonably be required to fulfil the Contractor's obligations under the Contract; and

(b) prior to commencement of the variation, the Superintendent has confirmed in writing to the Contractor that the direction will be regarded as a variation under Clause 40.1; or

prior to commencement of the variation, the Contractor has in writing requested the Superintendent to give the confirmation in (b) but the Superintendent has not done so within two days after the request.

There is a short cut to creating conditions of contract for a D&C contract. Rather than incorporating a standard form such as AS2124 and deleting irrelevant provisions (a process of subtraction), it is possible to incorporate only such aspects of the standard form as are relevant (a process of addition). For example, if the D&C contractor is prepared to carry all the risks involved in design and construction, there may only be need for provisions for progress payments, certifying practical completion, extensions of time for delays by the principal, and liquidated damages. Rather than drafting a new set of general conditions, the D&C contract could provide that:

The Works will be completely at the risk of the Contractor until Practical Completion and damage from any cause whatsoever must be remedied by the Contractor. The Principal will make monthly progress payments and the Superintendent (who is) will certify Practical Completion and extensions of time. The Date for Practical Completion is Liquidated damages are \$... per day. Security to be provided by the Contractor is \$..... The Contractor

must insure the Works for their full value and effect Public Liability Insurance for not less than \$. in respect of any one occurrence. The expressions used in this paragraph will have the same meaning as they have in AS2124-1986. Clause 5, the first paragraph of 14.1, the first paragraph of 14.3, clauses 18 to 21, 35.5, 35.6, 42.1 and 43 of AS2124 shall apply but the only ground for any extension of time will be that in clause 35.5(b)(i) of AS2124.

The above is an example of incorporation by reference rather than the all too common method of preparing a whole new set of general conditions of contract. It is faster, easier to understand, less expensive and it saves paper.

All standard forms of general conditions have elaborate provisions for the sharing of risk between the parties. It can be shown that if a principal lets numerous contracts, then over a period there is considerable saving to be made from sharing risk. The principal is, in effect, a self-insurer for certain risks.

For example, a principal may let ten contracts each for \$10 million. In one in ten cases there may be a latent site condition that costs \$1 million to overcome. If the principal has a latent site condition clause in the contracts, then the ten contracts will cost a total of \$101 million. But if the principal does not have a latent site condition, each tenderer will have to allow in the tender price for the risk of a latent site condition. To be sure of a profit, each tenderer would have to tender at least \$11 million for each contract because none will know on which project the latent site condition will occur. If they each tender only \$10 million, one will suffer a \$1 million loss.

Theoretically, the principal who does not have a latent site condition clause may have to pay a total of \$110 million for the ten contracts. In practice, of course, things are not so simple, but just as insurance companies make profits by accepting risks, so too can a principal. If the principal is more concerned with having a fixed price than making a possible saving in the long term by sharing risks, then a D&C contract with the bare minimum of general conditions is the ideal way to go.

In a few years one can expect to see 'decennial insurance' such as exists in France. This form of insurance would cover the cost of repairing damage to buildings caused by any defect in design, materials or construction that becomes apparent within a fixed period (e.g. ten years) after practical completion. Meanwhile it is not uncommon to require collateral warranties from the contractor's design consultants and to require that they carry a certain level of professional indemnity insurance. The form of compulsory insurance prescribed under the *Home Building Act 1989* (NSW) is similar to decennial insurance but lasts only seven years.

CONSTRUCTION MANAGEMENT METHOD

Construction management (CM) is a popular example of ‘managed’ delivery methods, which are characterised by a more active role for the principal as a member of the project team.

The term ‘construction management’ may be interpreted differently by different people and has been used loosely to describe a variety of methods of project delivery. But no matter in what form it is used, it implies a team approach. It attempts to unite a three-party team of principal, design consultant and construction manager into a non-adversarial, cohesive contractual relationship, all with a common goal to serve the project’s objectives and the principal’s needs in the best possible way. The construction team members ideally work together from the inception to the completion of the project. The project lifecycle stages are treated as integrated tasks within a construction system. The interaction of construction cost, quality and completion schedules is the prime task of the project team in order to give maximum value to the principal in the most economical time-frame. Fast-tracking is an integral feature of CM.

Construction management as a method of project delivery can take many forms. In this book, CM methods of project delivery are grouped into ‘Agency CM’ and ‘Non-agency CM’ depending on the role performed by the construction manager. They will now be discussed in detail.

6.3.1 Agency CM method

The principal selects a design consultant to design a project, and a construction manager to manage construction. A construction manager can be a contractor, design consultant or any other consultant. The key requirement in appointing a construction manager is the knowledge and experience that person has of managing construction.

In ‘agency construction management’ the construction manager operates as the principal’s agent in managing construction. The construction manager’s main tasks are to manage the construction stage and co-ordinate activities of subcontractors or separate contractors. The construction manager has no contract to build.

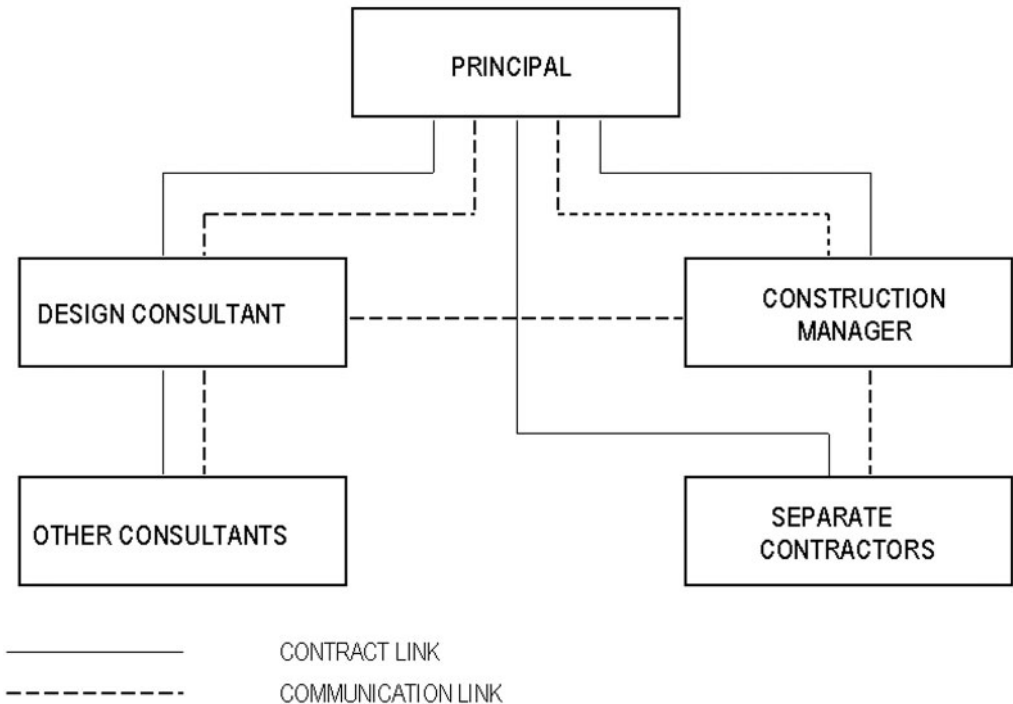
6.3.1.1 Organisation structure of an agency CM method

An organisation structure of the agency CM method of project delivery is given in Figure 6.2. It shows the three main team

members, namely the principal, design consultant and construction manager, and a series of contract and communication links between various team members. It is worth noting that separate contractors (the trade contractors) are contracted directly to the principal, with the construction manager being responsible for co-ordination and administration of those contracts. Another important feature of the agency CM method is direct interaction between the design consultant and the construction manager, highlighted by a communication link on the organisation chart.

FIGURE 6.2

THE AGENCY CONSTRUCTION MANAGEMENT METHOD OF PROJECT DELIVERY



6.3.1.2 Contract between the principal and the design consultant

The principal engages the main design consultant early in the conceptual stage to assist in defining the project scope and formulating the brief. Subsequently, the main design consultant will proceed to design and document the facility. Apart from implementing changes to the design and documentation as required during the construction stage, the main design consultant has no

further responsibilities. The responsibility for packaging of work, tendering, letting of contracts to separate contractors and administering those contracts lies with the construction manager.

Depending on the extent of work and the degree of risk, the design consultant may be engaged on a lump-sum or a percentage fee contract.

As is the case with the traditional method of project delivery, the main design consultant contracts with required specialist design consultants and assumes the responsibility for co-ordination and integration of all design and documentation activities.

There have been instances of a CM contract in which the construction manager performs both the role of the design consultant and, as agent of the principal, the role of construction manager.

6.3.1.3 Contract between the principal and the construction manager

The principal commonly engages a construction manager as early as possible in the life of the project, either towards the end of the conceptual stage or in the beginning of the design stage. The principal is an active member of the project team and is involved in the project's day-to-day affairs. The principal is likely to be experienced and knowledgeable in construction management, with good understanding of risk exposure. The principal is willing to accept more risk, including that related to the execution of separate construction contracts. In doing so, the principal expects that effective teamwork within the project team will offset the principal's higher exposure to risk.

Under an agency CM contract, the construction manager's risk is relatively low since the construction manager has no direct contracts with separate (trade) contractors (Ireland 1985).

The first task of the construction manager is to liaise with the design consultant in verifying the accuracy of the brief, after which the construction manager will formulate work packages that the design consultant will design and document. The construction manager will assist the design consultant by providing input on technical matters and feedback on design buildability and cost. The construction manager will then administer a tender system through which separate (trade) contractors will be selected and engaged, usually on lump-sum contracts. In the construction stage, the construction manager will administer separate contracts on behalf of the principal (this function is similar to that of a superintendent under the traditional method of delivery), and generally plan, co-ordinate and control construction activities of separate contractors. The construction manager's

primary responsibility is to co-ordinate and manage activities of separate contractors to ensure adherence to the contract documentation, the construction program, the cost budget and the quality standards.

The CM agency contract is commonly cost-plus with a guaranteed maximum price. The construction manager's reward is a usually lump-sum management fee, but it may also be, wholly or in part, a percentage of the total construction cost. A lump-sum management fee is seen as providing an incentive to the construction manager to perform. The fee will cover the construction manager's costs, for example the construction manager's profit, head office overheads, salary and associated costs, any recruitment costs for site or head office staff, and legal costs. Costs covered by the fee and not reimbursed as actual costs are often called 'non-reimbursable costs'. Reimbursable costs are those associated with preliminary items and payments to separate contractors. If the guaranteed maximum price is exceeded, the construction manager would usually be liable to pay for the excess. In the opposite case, the construction manager may earn a share of savings.

6.3.1.4 Contracts between the principal and separate contractors

Direct contracts between the principal and separate contractors (called trade contractors) are the main feature of the agency CM method. The construction manager lets these contracts as work packages on a competitive tender basis to separate contractors, who are usually paid a lump-sum price. The construction manager then administers these contracts on behalf of the principal.

Having no direct contracts with separate contractors, the construction manager can concentrate on effective co-ordination and management of construction activities without the risk of exposure to contractual problems or disputes with separate contractors. The principal is assured that the construction manager, who carries no burden of direct construction contracts, will act in the best interest of the principal. The construction manager's failure to do so could result in the construction manager's replacement without any impact on any of the separate contracts. Separate contractors also benefit from direct contracts with the principal in the form of better security of payments.

General conditions of contract used in the traditional method of project delivery are generally suitable for contracts formed between the principal and separate contractors.

Through a brief analysis of different types of contractual links in an agency CM delivery method (Figure 6.2), the following

observations are pertinent to the roles of the principal, construction manager and separate contractors:

- The principal has a greater measure of control over the cost in that the principal can progressively call lump-sum tenders for each separate contract and can pace the work to the availability of funds.
- The principal cannot sue the construction manager for breaches of contract committed by the separate contractors.
- The principal can sue the construction manager for not managing as agreed, but the measure of damages is not the cost of fixing defective work carried by the separate contractors. It is the amount necessary to put the principal in the position the principal would have been in had the construction manager managed properly.
- If the construction manager is not performing the management services adequately, the principal can terminate the construction manager's contract without affecting the separate contracts, which continue uninterrupted.
- Since there is no contract between the separate contractors and the construction manager, the construction manager is immune from claims for the contract price from separate contractors; similarly, the construction manager cannot sue separate contractors for not performing their contracts.
- The construction manager is given a measure of protection against the insolvency of the principal in that, unlike ordinary subcontractors, the separate contractors cannot sue the construction manager for their respective contract prices.
- The separate contractors are protected from the insolvency of the construction manager since they sue the principal directly for their respective contract prices.

6.3.1.5 General conditions of contract for an agency CM method

In Australia, the choice of general conditions of contract for the CM delivery method is restricted to a small number of standard forms such as CM1 contract published by the Master Builders Association and the conditions of contract of the Department of Defence. Some general conditions of contract such as AS2124 may be adapted for use in CM, but the most commonly adopted approach is for lawyers to draft general conditions of contract with a specific project in mind.

The form of general conditions of contract for an agency CM method need only be very brief because the construction manager is not assuming the usual design and construction risks. The construction manager is merely contracting to manage, not to design and construct.

6.3.2 Non-agency CM method

The most significant difference between non-agency CM and agency CM methods is in the role performed by the construction manager in relation to construction. Until the start of the

construction stage, the construction manager undertakes much the same tasks under a non-agency arrangement as under an agency arrangement. However, under the non-agency arrangement, the construction manager's role changes in the construction stage to that of a contractor. The agency CM contracts to manage. The non-agency CM contracts to manage and construct.

A non-agency CM method is attractive to the principal when the risk of construction is high. The principal wants to retain the benefits of teamwork between the principal, design consultant and construction manager, but requires the construction manager to take full responsibility for construction by entering into direct contracts with subcontractors. These are the main advantages of the non-agency arrangement for the principal. However, this arrangement may in some cases increase rather than decrease the principal's risk. This is likely to occur when the construction manager experiences problems in executing construction activities through subcontracts and is bound to suffer a financial detriment. At that time the construction manager may revert to being a typical contractor and attempt to minimise the likely losses through a more hard-nosed approach to administering subcontracts.

While fast-tracking is an important feature of both the agency CM and non-agency CM method of project delivery, in a non-agency arrangement the design and construction will not be divided into trade packages (separate contracts with the principal) as they will in an agency CM arrangement. Instead, subcontracts will be let to subcontractors on a competitive basis with the construction manager assuming the role of a sole contractor.

6.3.2.1 Organisation structure of a non-agency CM method

Figure 6.3 shows a typical structure of a non-agency CM project delivery method with two main differences immediately apparent:

- the principal has no direct contracts with subcontractors
- subcontractors are now contracted to the construction manager.

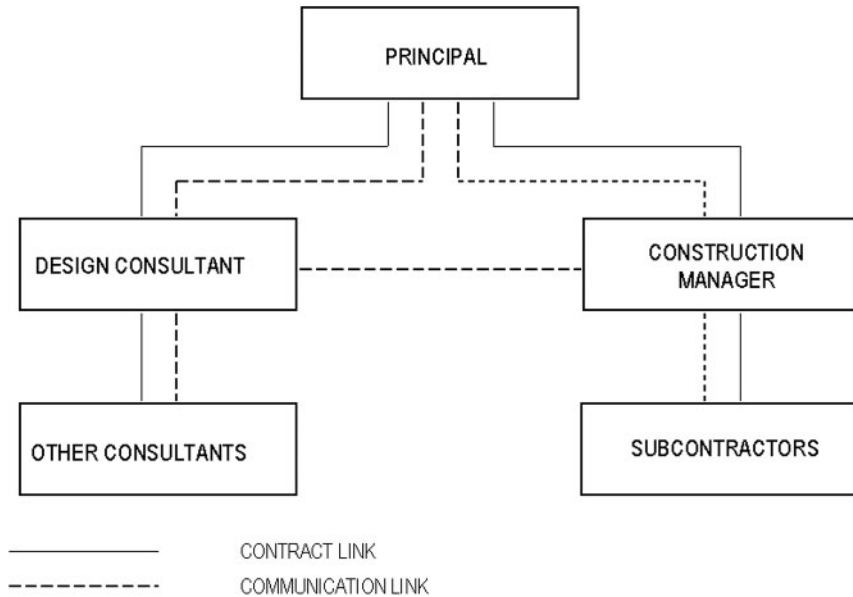
The principal's intention of using the construction manager as a contractor while maintaining the construction manager's involvement on a project team is clearly apparent in Figure 6.3.

6.3.2.2 Contract between the principal and the design consultant

The role and the tasks performed by the design consultant are usually identical under both versions of CM delivery. On rare

FIGURE 6.3

THE NON-AGENCY CONSTRUCTION MANAGEMENT METHOD OF PROJECT DELIVERY



occasions, under the non-agency CM arrangement, the design consultant may have additional involvement in the construction stage as the principal's superintendent administering the contract formed between the principal and the construction manager. The design consultant's tasks as superintendent would be similar to those under the traditional method described in Chapter 5.

The reason that the organisation chart of the non-agency CM method shows no superintendent is because the role of a superintendent is often performed by the principal. In some cases the principal may appoint the design consultant or another consultant as superintendent.

6.3.2.3 Contract between the principal and the construction manager

The principal may engage the construction manager either by tender or by negotiation. The appointment will be made early in the project's lifecycle if the project is to benefit from the construction manager's input into design buildability. Using competitive tendering, the construction manager will then progressively select subcontractors as the design documentation becomes available and will enter into subcontract agreements. In the construction stage the main role of the construction manager will be to construct the facility through the work of subcontractors.

If the principal has appointed a superintendent, the superintendent will sometimes make decisions on what work is to be subcontracted. The superintendent will oversee a tender process and will approve letting of individual subcontracts, including their prices and conditions. In the absence of a superintendent, the principal will make the necessary decisions.

The most common option for a contract price in a non-agency CM contract between the principal and the construction manager is cost-plus, with a payment of a lump-sum management fee to the construction manager. The construction manager may also be paid the 'agreed labour rates' for the work performed directly by the construction manager.

The construction manager will pay for all incurred 'cost' items including payments made to subcontractors and suppliers, and for the cost of preliminary items. The construction manager will be reimbursed in full by the principal for these cost items. The construction manager will also be reimbursed for the cost of work authorised by the principal under the 'agreed labour rates'.

In cost-plus contracts, the final construction contract price is known only after the project has been constructed. The principal largely relies on the skill and integrity of the construction manager to maintain budget integrity. To improve certainty of the final construction cost, the principal may require a guaranteed maximum construction price. Under this arrangement, the construction manager would assume the risk for cost overruns in excess of the guaranteed maximum price. However, there is no guarantee of achieving a maximum price as it will almost certainly be subject to variations. The construction manager's contract may also contain liquidated damages for late completion, bonuses for early completion, or a savings incentive clause. Under an agency CM contract, it is not practical to have liquidated damages for delay by the construction manager. Instead, the principal will usually have the right to liquidated damages under each trade package.

If the construction manager is going to contract to do construction work (the non-agency arrangement), it is important that the CM contract covers the obligations and risks of both the principal and the construction manager, as is done in the traditional method of contracting.

Following is an example of a non-agency 'cost-plus fixed fee management contract'. Under this form of contract, the general conditions AS2124-1986 could be used and the following special conditions spell out the management obligation and the basis of payment.

CONSTRUCTION MANAGEMENT CONTRACT (NON-AGENCY)

- 1 The Works are The design of the Works is being carried out by and is not yet complete. The Works are described generally in but there will be additions and changes.
- 2 The 'Lump Sum Management Fee' is the lump sum tendered by the Construction Manager and accepted by the Principal and the 'Agreed Labour Rates' are the labour rates tendered by the Construction Manager and accepted by the Principal.
- 3 The Contract Price is 'cost-plus'. Additions and changes will not be treated as variations and will not affect the Lump Sum Management Fee and the Agreed Labour Rates. The Construction Manager will be paid the Lump Sum Management Fee, the amounts payable to subcontractors for constructing the Works and the Agreed Labour Rates for work performed by the Construction Manager at the request of the Superintendent. If, at the request of the Superintendent, the Construction Manager provides plant or materials (otherwise than through a subcontract) the Principal will reimburse the Construction Manager for the actual cost incurred by the Construction Manager. No matter what changes occur in the design or what variations are ordered, the Lump Sum Management Fee will not change and the Construction Manager will not be entitled to any amount over and above the Lump Sum Management Fee and the amounts payable for work performed by subcontractors and for labour and materials provided by the Construction Manager.
- 4 The Construction Manager must carry out the whole of the Works using subcontractors and the Construction Manager's own labour. The Superintendent will tell the Construction Manager what work is to be subcontracted and the Construction Manager must obtain competitive quotes for the subcontract work and the approval of the Superintendent to the letting of each subcontract and to the subcontract price and conditions.
- 5 Amongst other things, the Lump Sum Management Fee will cover:
 - (a) provision of a Project Manager, a Foreman and (specify)
 - (b) profit and off-site overheads and (specify)

6.3.2.4 Contracts between the construction manager and subcontractors

The construction manager will contract with approved subcontractors. Subcontracts will be awarded by competitive tendering, usually on a lump-sum basis. The subcontract prices and conditions will be approved by the principal or the superintendent.

The main role of the construction manager is to plan and organise construction activities, and co-ordinate and control the work of subcontractors in much the same manner as a general contractor in the traditional method of project delivery.

6.3.3 Commentary on CM methods

The foregoing discussion of both the agency and non-agency CM methods of project delivery highlights their respective organisation structures and defines important contractual and communication links. For clarity, important issues shown graphically in various organisation charts will now be briefly summarised.

- 1 It is worth noting that Figure 6.3 differs from Figure 6.2 only in that separate contractors are replaced with subcontractors, who are now contracted directly to the construction manager (represented by a solid line linking the subcontractors to the construction manager). There is no direct contract between the principal and the subcontractors (no solid line linking the principal and the subcontractors).
- 2 Figure 6.3 clearly shows that the principal cannot sue the subcontractors for breach of contract and that the construction manager is contractually liable for the work of the subcontractors.
- 3 Figure 6.3 also shows that if the construction manager were to fail to pay the subcontractors, the subcontractors could not sue the principal for the subcontract price.
- 4 Figure 6.3 is identical to Figure 5.1 except for one broken line (a line of communication) between the principal and the construction manager. This reflects the fact that the design consultant no longer has the traditional role of managing the construction contract for the principal. The construction contractor (now called a construction manager) manages as well as constructs. The contractual relationship between the construction manager and the principal in the non-agency CM method is exactly the same as under the traditional method of delivery.
- 5 In the traditional method, shown in Figure 5.1, the design consultant has two functions, to (i) design and (ii) manage, and the construction contractor has one function, to construct. In Figure 6.3, the design consultant has only one function, to design, while the construction manager has two functions, to (i) manage and (ii) construct.
- 6 In the D&C method, shown in Figure 6.1, the contractor has all three functions: to design, manage and construct. In the agency CM method, shown in Figure 6.2, the construction manager has only one function, to manage. Similarly the design consultant has only one function, to design.

There should be a difference in the tender price depending on whether a tender is for an agency or a non-agency CM contract. In deducing the reason for the difference, consider the following three elements when pricing the agency and non-agency CM contracts:

- 1 amounts payable to subcontractors or separate contractors
- 2 direct costs of the construction manager (expenditure incurred for labour, materials, insurance, overheads, etc.)
- 3 'risk costs'.

'Risk costs' are the costs that will be incurred if certain risks eventuate. For simplicity let's assume that they are separated from overheads. A major risk in any contract is the risk of a dispute. The cost of defending claims can amount to millions of dollars and whether or not the dispute is won, the successful party will never recover all the costs of pursuing or defending the claim. Therefore, the more contracts a construction manager enters, the greater are the 'risk costs'.

In either form of CM method, (1) is usually paid by the principal. Commonly (2) is in part reimbursed at cost and in part fixed by a lump sum or a percentage or a combination of the two. 'Risk costs' are usually considered to be part of overheads and therefore within the fixed lump sum or the fixed percentage. It is rare to see a CM contract, which provides for actual cost reimbursement for risk costs.

In the agency CM method, the major construction contracts are separate (trade) contracts, not subcontracts. The separate contracts can be made by the construction manager and the form of the general contract conditions can be the same as a subcontract, but they are made by the construction manager as agent for the principal. Therefore, in law, they are contracts between the principal and the separate contractor. Separate contractors cannot sue the construction manager under the separate contract. In law, the construction manager under the agency CM method has fewer contracts and hence less risk costs than the construction manager under the non-agency CM method.

Since the construction manager has less risk, the amount in the construction manager's price to cover risk costs should be less. Since the amount to cover risk costs is usually in the lump sum or percentage management fee, the fee should be less than for an equivalent project where the non-agency CM method is used. The management fee will obviously vary from contract to contract, but where under the agency CM arrangement it may be 3 per cent of the amounts payable to trade contractors for construction, under the non-agency arrangement it is more likely to be 10 per cent of the amount payable to subcontractors for construction work even though, in both instances, the amounts payable, whether to trade contractors or to subcontractors, are likely to be, in total, much the same amount. The difference represents the greater risks that the CM bears in the non-agency CM arrangement.

In the non-agency CM method, the subcontractor cannot sue the principal under the subcontract and will sue the construction

manager instead. The principal has no contract with the subcontractor. The risk costs of the construction manager are therefore greater under the non-agency arrangement.

In both agency and non-agency CM methods, the principal usually contracts to pay directly to the construction manager, or to reimburse the construction manager, the amount due to separate contractors or subcontractors for work on the project. Consider the problem when there is a dispute over the amount due. Assume that a separate contractor claims \$10 million and the principal says that \$8 million is the correct entitlement. In the agency CM method, the dispute is in law between the principal and the separate contractor. The construction manager can, at the request and cost of the principal, defend the principal's stance in court or arbitration, but the construction manager need incur no risk costs on account of the dispute.

Now consider the position when the CM contract is the non-agency arrangement. The subcontractor claiming \$10 million cannot sue the principal and will proceed in law against the construction manager. The construction manager is in an invidious position. If the construction manager supports the principal's contention, and the subcontractor is successful, can the construction manager recover the risk costs incurred in defending the unjustified claim? The risk costs are not part of the cost of construction. They are not part of amounts payable to subcontractors. If there were a special condition in the CM contract providing that the principal would indemnify the construction manager for risk costs, the construction manager would be protected. There do not appear to be any CM contracts that do that.

If, in the above example, the construction manager were to take the side of the subcontractor and claim that the correct amount is \$10 million, the dispute would be between the construction manager and the principal. Win or lose, the construction manager would incur risk costs which would be irrecoverable. (The problem is considered in detail by Davenport 1996c.)

Other risk costs, which do not exist under the agency CM method but do exist under the non-agency CM method, include:

- liability to subcontractors upon insolvency of the principal or delay or refusal of the principal to pay an amount due
- liability to the principal for liquidated damages upon delay of a subcontractor
- liability to the principal for defective materials or workmanship provided by a subcontractor
- liability to a subcontractor for delay costs

- statutory liabilities pertaining to a construction contractor (but not to a contractor only managing for the principal the construction contracts of construction contractors), for example under workers' compensation, occupational health and safety, planning, environmental, domestic building work and industrial relations legislation
- (at the moment, in New South Wales only) liability under the *Building and Construction Industry Security of Payment Act 1999* for progress claims.

6.3.4 Responsibilities of the construction manager

This chapter has examined in detail both the agency and non-agency CM methods of project delivery, defined two specific organisation structures, identified the main contractual links, commented on the general conditions of contract, and alluded to a range of services provided by the construction manager. This section will attempt to provide a comprehensive list of responsibilities of the construction manager in design, tendering, and the pre-construction and construction stages of the project lifecycle.

The services provided by the construction manager in the design, tendering and pre-construction stages are generally identical for both agency and non-agency CM methods. The only notable difference is that the role of a superintendent, if appointed, in the non-agency CM method may come into play in the construction stage.

Responsibilities in the design stage

- liaising with the design consultant in analysing the brief and confirming the key decisions on the choice of a project delivery method and the option for a contract price
- developing a design management plan, the main components of which are a program, cost budget, design co-ordination and integration processes, design strategy, fast-tracking, packaging of construction work, and design appraisal through value management
- developing a cost control system and a suitable IT system
- using a program to monitor progress and the use of resources
- participating in a design appraisal system
- implementing design co-ordination and integration processes
- breaking up the design into appropriate work packages
- ensuring the highest quality of design documentation
- monitoring approval processes.

Responsibilities in the tendering stage

- preparing tender documentation for work packages and appropriate general conditions of contract

- administering competitive tendering, evaluating tenders and making recommendations to the principal on preferred tenderers.

Responsibilities in the pre-construction stage

- letting contracts
- detailed programming and cost budgeting of the work
- developing a quality assurance plan
- establishing and organising the site
- organising site supervision
- developing a plan for managing information
- developing a strategy for administering construction contracts
- monitoring production of design documentation
- preparing schedules of resources
- placing orders for plant and equipment with long delivery lead times
- securing statutory approvals
- effecting all necessary insurances.

Responsibilities in the construction stage

In the construction stage, usually the only function performed by the construction manager under an agency CM arrangement is related to 'management', while under the non-agency CM method the construction manager performs two functions: 'management' and 'construction'. While the construction manager under the non-agency arrangement becomes a contractor in the construction stage, the construction manager continues to be an active member of the project team with a particular requirement to act in the best interest of the project and the principal. Consequently, the list of management services performed by the construction manager under the agency and non-agency CM arrangements is largely the same. Particularly relevant services provided by the construction manager are listed below:

- monitoring and controlling progress through programs and cost plans
- monitoring and controlling resources, both human and physical
- leading construction
- administering contracts of separate contractors and suppliers
- co-ordinating and integrating activities of separate contractors or subcontractors
- managing information flow
- managing site administration, particularly accounting, record keeping, processing of claims
- managing the production and checking of shop drawings
- managing the site, particularly accommodation, amenities, safety, security, materials and personnel handling equipment

- monitoring quality of work
- preparing progress reports
- managing industrial relations.

The only notable difference in the construction manager's responsibilities of under the non-agency CM method is in the role of a superintendent. If appointed by the principal, the superintendent would have the power to direct the construction manager to do certain things and would generally exercise control over the construction manager's activities. Under the agency CM method, it would not be usual to have a superintendent in the CM contract.

6.3.5 Advantages and disadvantages of construction management

Construction management implies teamwork. It brings together the principal, designer and construction manager, who work as a team to achieve successful outcomes. The principal's direct involvement is particularly important since it greatly enhances a decision-making process over the whole project.

Potential advantages to the principal

There are several advantages of CM to the principal:

- Since the principal assumes more risk under CM, the project is less reliant on risk contingencies and the principal has a better control over risk.
- The principal has much greater control over the project as a result of the principal's direct involvement on the project team and in decision-making.
- The presence of the construction manager should greatly enhance the efficiency of contract administration.
- Earlier involvement of the construction manager as a member of the project team enhances quality of design, particularly in the areas of buildability, co-ordination and integration, packaging and cost effectiveness. It also improves the overall management of the design stage.
- Fast-tracking speeds up the overall project lifecycle and gives the principal an opportunity for an early return on invested funds.
- Breaking up construction into work packages ensures price competition from separate contractors.
- Breaking up work into packages allows the principal to control the budget and to change, omit or postpone work where the budget is likely to be exceeded.
- The principal has greater flexibility to make design changes as the project proceeds.
- The construction manager ensures a more co-ordinated and integrated construction process.
- Teamwork reduces the incidence of contractual disputation.

- Under the agency CM method the principal is able to replace a poorly performing construction manager without adversely affecting the existing separate contracts.
- The CM method of delivery should attract more competitive prices from separate contractors; these would be free from the risk allowances normally reserved, under the traditional method, for unethical conduct of general contractors.
- Packaging the work into separate contracts reduces the need for provisional sums or provisional costs.
- Information flow is greatly enhanced.

Potential disadvantages to the principal

Under ideal conditions, construction management should greatly improve performance of the project development cycle and achieve better outcomes. But such conditions rarely prevail and principals need to be aware of potential pitfalls of construction management should adverse conditions be experienced. Since it embraces fast-tracking, the performance of the CM method is highly sensitive to changes to the brief and to the design once construction has begun. The impact of such changes on the final cost and the time performance are severe. Other potential disadvantages of construction management are listed below:

- The total project cost is unknown until the project is completed.
- The principal carries more risk and is more exposed to the adverse impact of risk.
- The design consultant's ability to develop an innovative and unique design may be impeded by the drive for maximum efficiency promoted by the design management plan.
- The cost of the project manager's fee may increase the up-front cost of the project. This should be offset by enhanced buildability of the design and the shorter overall project lifecycle.
- The construction manager operating under the non-agency CM method could have a conflict of interest when exposed to the possibility of a financial loss. Under such a scenario, the construction manager may not act in the best interest of the principal.

6.4

PROJECT MANAGEMENT METHOD

In this section, 'project management' refers to a method of project delivery as distinct from a body of knowledge or a process known as 'project management'. The project management delivery method is a unique organisation structure with the project

manager as a leader of the team. In order to successfully deliver the project, the project manager will apply the concept of project management throughout its lifecycle. The fundamentals of project management can be found in Project Management Body of Knowledge (PMBOK 1996).

The project management (PM) delivery method is a more refined form of the agency CM method with the addition of a project manager who assumes total responsibility for managing the project from inception to completion. In some cases the project manager may be the principal or an employee of the principal.

The principal appoints and empowers the project manager to represent the principal's interests as the leader of a project team and to bring a businesslike approach into the co-ordination and management of a diverse range of skills and organisations in producing a facility. Since the project manager assumes responsibility for the entire project lifecycle, it follows that the principal will need to appoint the project manager early in the life of the project, usually at the start of the conceptual stage.

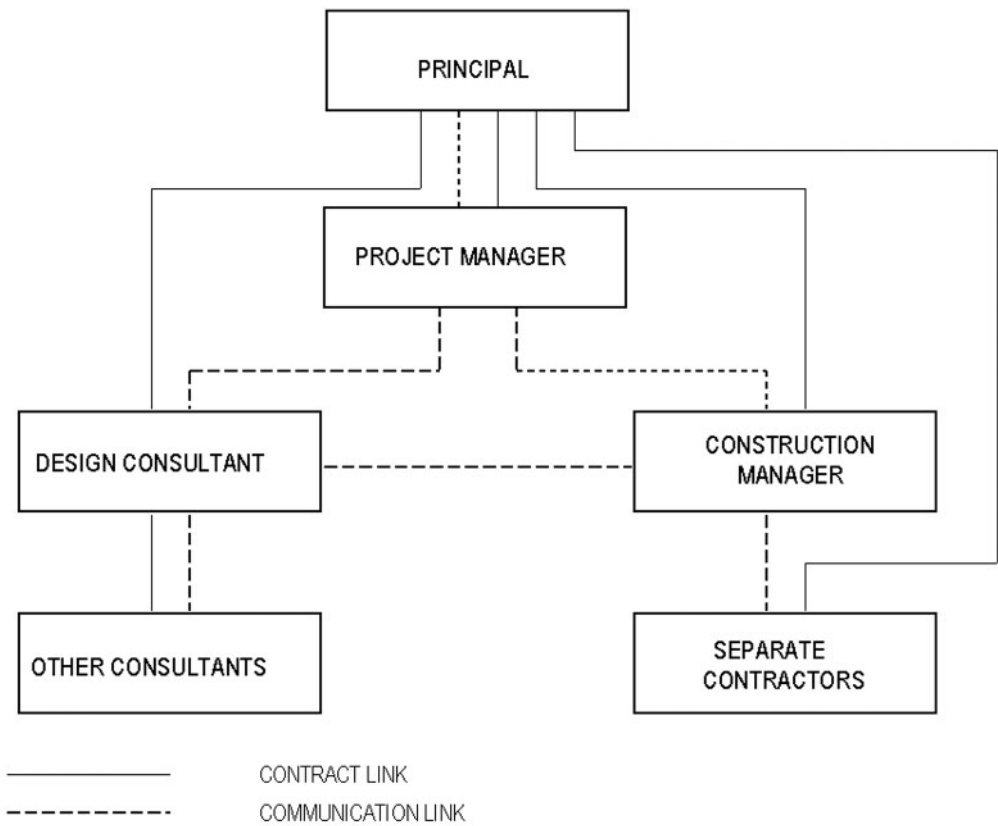
The project team, lead by the project manager, comprises the design consultant, construction manager and other relevant consultants. The principal is also a member of the project team but is fully represented by the project manager in day-to-day decision-making.

Apart from being an effective team leader and motivator, the project manager is responsible for the development of a strategic plan, organisation of the necessary resources both human and physical, co-ordination and integration of activities at each stage of the project's lifecycle, and control of the entire process.

6.4.1 Organisation structure of the project management delivery method

An organisation structure of the PM delivery method is given in Figure 6.4. Its origin lies in an agency CM method when the principal performed the role of a project manager. In the PM structure, the project manager is the principal's representative and the team leader. The project manager has no contracts with any other team member. While the principal empowers the project manager to lead the team and be the main day-to-day decision-maker, the principal assumes the responsibility for contracts with the other team members.

FIGURE 6.4
THE PROJECT MANAGEMENT METHOD OF PROJECT DELIVERY



6.4.2 Contract between the principal and the project manager

The project manager is the principal’s agent and is required to act in the principal’s best interest. The principal will engage the project manager in the early part of the conceptual stage to assist in defining the project scope, feasibility, strategic planning and briefing. The project manager will make recommendations to the principal on the selection of the design consultant and the construction manager. From the beginning of the design stage, the project manager will work closely with the design consultant and the construction manager on developing the design, agreeing on work packages, co-ordinating and integrating the production of documentation, arranging for competitive tendering, awarding

contracts to separate contractors and managing construction activities.

Because of the principal's involvement on the management team, the principal shares a large portion of the total risk. The principal expects that some of this risk will be minimised by the application of effective and efficient management practices applied through teamwork. In the absence of a guaranteed maximum price, CM and PM contracts provide the lowest level of risk to the construction manager and project manager. With a guaranteed maximum price, the risk will naturally increase.

The PM contract, due to its fast-tracking nature, is also cost-plus and the principal may insist on a guaranteed maximum price. The project manager may be required to pay a separate contractor, but the money would come from a bank account set up by the project manager with the principal's funds. The project manager will be paid a management fee in the form of a lump sum or a percentage of the final construction cost and will be reimbursed for any out-of-pocket expenses and approved expenditures.

6.4.3 Other contracts with the principal

A contract between the design consultant and the principal and between separate contractors and the principal will largely be the same as under the CM contract. Services of the construction manager under the PM contract are similar to those under the CM contract, but the construction manager will not be responsible for payments to separate contractors and will not be required to guarantee the maximum price. The construction manager will be paid a management fee and will be reimbursed for the cost of preliminary items and any other approved expenditures.

6.4.4 General conditions of a contract between principal and project manager

Construction management general conditions of contract can be adapted for use as project management contracts. However, the most common approach adopted by principals is to draft special conditions of contract for a particular project.

Following is an example of a project management contract where the project manager contracts as agent for the principal.

PROJECT MANAGEMENT CONTRACT

The Principal, namely
appoints
as Project Manager for the following Project
.....

The Project Manager agrees to provide services to the Principal in accordance with the conditions contained in this Agreement for the Management Fee of \$.....
plus approved expenditure.

The Budget of the Project is \$.....

The Expiry Date is

The alternative to apply in clause 9 (Project Account) is:

Alternative 1 – payment by the Principal directly;

or

Alternative 2 – the maximum security is \$.....

The date of this agreement is

Signed for the Project Manager by:

.....

Signed for the Principal by:

.....

1 Services

The Project Manager will manage the Project on the Principal's behalf. To carry out the Project the Principal will from time to time let various contracts. The management services to be provided by the Project Manager are described generally in the Principal's invitation and the Project Manager's submission. Those documents do not form part of this Agreement and do not completely delineate the services that the Principal may require. The Principal is not bound to give the Project Manager any particular work. The Project Manager will not be entitled to any remuneration over and above the remuneration provided in this Agreement no matter what services are provided or what changes occur.

2 Limits of Authority

Without the prior written approval of the Principal, the Project Manager will not:

- 1 Give any direction that may involve the Principal in expenditure additional to that for which the Principal would be liable in the absence of the direction.
- 2 Purport to vary a contract or to waive a right of the Principal.
- 3 Accept any defective work or permit any omissions.

3 Confidentiality and Records

The Project Manager will maintain confidentiality. Without the Principal's permission, the Project Manager will not disclose to the media or anyone else information concerning the Project.

Records created in the course of management of the Project will be the property of the Principal. The Project Manager will keep records relating to the Project in secure fireproof storage for seven years. The Project Manager will permit the Principal access to the records and on request will hand over to the Principal any records requested.

The Project Manager will abide by any instruction from the Principal concerning the accounting records to be maintained.

4 Insurance

The Principal will effect and maintain a policy of insurance of the Works and Public Liability. On request, a copy of the policy will be provided to the Project Manager. If at any time the Project Manager considers that the level of insurance should be increased, the Project Manager will advise the Principal. Any additional insurance required by the Project Manager specifically for the protection of the Project Manager will be at the cost of the Project Manager.

Except with written approval of the Principal, all personnel used by the Project Manager will be employees of the Project Manager and the Project Manager will maintain a worker's compensation policy of insurance covering them. At the request of the Principal, the Project Manager will produce the policy to the Principal for inspection.

The cost of worker's compensation insurance for personnel performing services which the Project Management Fee covers will be covered by that Fee, but the cost of worker's compensation for personnel for whom the Project Manager is entitled to be remunerated on the basis of approved expenditure will be covered by the rates agreed for those personnel.

5 Project Management Fee

The project management fee covers profit and overhead including but not limited to:

- costs incurred before the signing of this agreement including but not limited to the costs of tendering and negotiating this Agreement
- head office administrative, support and senior supervisory services (including but not limited to directors controlling design, documentation, construction, estimating, programming, contracts and administration)
- head office costs including but not limited to salaries and allowances and fringe benefits
- computer services
- off-site accountancy services
- off-site secretarial services
- banking (except for bank charges for maintaining the Project Account referred to in clause 9) and invoice payment services
- provision of off-site meeting rooms and other off-site office facilities
- legal services

- all other costs (other than travel and accommodation costs reasonably incurred in travelling to the site) including salary costs of head office staff of the Project Manager or agents who, in performance of this Agreement, are required to attend the site for inspections or meetings.

6 Approved Expenditure

Provided that the Project Manager obtains the prior approval in writing of the Principal to the incurring of the expenditure and to the cost or rates involved, the Project Manager will be entitled to be reimbursed expenditure reasonably incurred by the Project Manager in the performance of this Agreement.

Expenditure in respect of items covered by the Project Management Fee will not be reimbursed under this provision. Expenditure arising from breach of contract, tort, carelessness, negligence or incompetence of the Project Manager or the employees or agents of the Project Manager will also not be reimbursed under this provision.

7 Project Cost to Date

At the time of a claim, the 'Project Cost to Date' will be the sum of:

- 1 amounts paid by the Principal (or the Project Manager on behalf of the Principal) to consultants or contractors under contracts managed by the Project Manager
- 2 amounts (other than instalments of the Project Management Fee) paid under this Agreement by the Principal to the Project Manager
- 3 the amounts unpaid but properly shown in a progress statement as due under contracts managed by the Project Manager
- 4 approved Expenditure unpaid but properly shown in a progress statement as due to the Project Manager under this Agreement.

Amounts paid or payable as damages for breach of contract, whether to the Project Manager or under contracts managed by the Project Manager, will not be included. If the Principal deducts liquidated damages from amounts otherwise payable under contracts managed by the Project Manager, the amount of liquidated damages deducted will be included in the Project Cost to Date.

If the Management Fee is a lump sum and the Project Cost to Date reaches 125 per cent of the Total Budget minus the Project Management Fee component, the Management Fee will not apply to services provided thereafter. For those services, the Principal will pay the Project Manager a reasonable fee.

If the Management Fee is a lump sum and at termination of the services of the Project Manager the Project Cost to Date is less than 75 per cent of the Total Budget without the Management Fee component, the Project Management Fee will be reduced to an amount that bears the same proportion to the original Project Management Fee as the Cost to Date bears to the Total Budget without the Management Fee component.

8 Progress Payments

Each month and on termination of the services of the Project Manager, the Project Manager will provide to the Principal:

- 1 a statement of all amounts due under contracts being managed by the Project Manager
- 2 a statement of all approved expenditure to which the Project Manager is entitled to be reimbursed
- 3 a statement of the instalment of the Project Management Fee claimed.

The Principal will pay approved expenditure and an instalment of the Project Management Fee within 30 days after receipt of the statements supported by such verification as the Principal may request.

When the Project Management Fee is a percentage, the percentage will be applied to the Project Cost to Date and each instalment of the Project Management Fee claimed will be the product of 90 per cent of the Project Cost to Date and the Project Management Fee less previous instalments.

When the Project Management Fee is a lump sum, each instalment of the Project Management Fee claimed will be:

$$\begin{array}{rcl} A \times B & & 90 \\ \hline & \times & \hline \text{Total budget} & & 100 \end{array}$$

where:

A = the Project Management Fee; and

B = the lesser of the amount described in the Agreement as the Total Budget and the Project Cost to Date.

The balance of the Project Management Fee will be paid on termination of the services of the Project Manager.

9 Project Account

Alternative 1

Amounts due under contracts managed by the Project Manager will be paid directly by the Principal.

Alternative 2

The Project Manager on behalf of the Principal will make payments due under contracts managed by the Project Manager. The Principal will provide the funds. The Project Manager will open a separate account (the Project Account) with a bank approved by the Principal. The Principal will nominate the title of the account. The Project Manager will deposit into the Project Account all funds provided by the Principal to enable payments to be made under managed contracts.

Funds in the Project Account belong to the Principal and will only be used to pay moneys due under contracts managed by the Project Manager pursuant to this Agreement. The fund will not be used to pay the Project Manager.

With each monthly statement under clause 8, the Project Manager will provide to the Principal a statement of account for the Project Account and notice of funds required to make expected withdrawals in the next month.

As security to cover the Principal's interest in the moneys in the Project Account and unauthorised withdrawals, the Project Manager will provide to the Principal an unconditional undertaking from a bank approved by the Principal. The Principal may from time to time require different amounts of security but not more than the specified maximum. The form of the unconditional undertaking will be that in AS2124-1986 (p. 38).

The security will be released when, at the request of the Principal, the Project Manager closes the Project Account and accounts to the Principal for all funds provided by the Principal. Bank charges for maintaining the Project Account will come out of the Project Account.

10 Arbitration

If the Principal or the Principal's Client is involved in an arbitration arising out of any contract managed by the Project Manager and any party to the arbitration has a claim against the Project Manager, the Project Manager will, at the request of the Principal, consent to the joinder in the arbitration of the Project Manager and the claim against the Project Manager.

11 Termination

The Principal can terminate the services of the Project Manager at any time by notice in writing. Except where termination is for breach of contract by the Project Manager, the Approved Expenditure will include the Project Manager's reasonable costs of disestablishment.

If the Project has not been completed by the Expiry Date, the Project Manager can, by three months' notice in writing to the Principal, terminate the Agreement at the Expiry date or any time thereafter.

6.4.5 Responsibilities of the project manager

The project manager assumes the overall responsibility for management of the project from inception till completion. The project manager leads the project team and co-ordinates the work of all the participants in order to achieve successful outcomes. The project manager periodically reports to the principal on progress and receives instructions on policy.

A list of the project manager's responsibilities is a long one but it needs to be remembered that the project manager will delegate most responsibilities while remaining accountable to the other team members, particularly the design consultant and the construction manager.

Responsibilities in the conceptual stage

The overall responsibility of the project manager is to formulate the most feasible development strategy for the proposed project and prepare a brief. Specific activities for which the project manager is responsible are:

- defining the principal's needs
- developing a scope statement
- conducting feasibility and recommending the best project strategy
- developing a strategic plan
- assessing risk
- preparing cost and time budgets
- assisting with project finance
- assisting in selecting a site
- preparing a brief statement.

Responsibilities in the design stage

The project manager's task is oversee the development of a design and documentation of the proposed facility in accordance with the brief and various statutory requirements to satisfy all the project objectives in terms of functionality, cost, time and quality. In doing so, the project manager will:

- establish a design team
- brief design and other consultants
- confirm the choice of a delivery method
- develop a design management plan
- secure development and building approvals
- break up the project into work packages
- co-ordinate and integrate design activities
- co-ordinate production of documentation
- co-ordinate all interdisciplinary teamwork
- conduct value management studies
- monitor cost and time performance
- prepare tender documentation.

Responsibilities in the tendering stage

The main responsibilities of the project manager are to:

- prepare general conditions of contract for separate contractors
- prepare the principal's cost estimate
- administer tendering and recommend to the principal selection of best tenderers for separate contracts
- award contracts to separate contractors.

Responsibilities in the pre-construction stage

The project manager's task is to ensure that the site and the necessary resources have been organised for the construction stage. The project manager will:

- ensure that project funding has been secured
- ensure that the site is available
- arrange for various insurances and statutory approvals
- monitor the construction manager's progress in establishing the site with appropriate amenities, safety and security
- monitor the construction manager's progress in securing all the required resources
- develop and implement an information management system
- prepare a detailed program and a construction cost plan
- prepare a quality management plan
- put in place a process for contract administration
- develop the key performance indicators
- ensure that the necessary human and physical resources have been organised.

Responsibilities in the construction stage

The project manager is responsible for managing completion of construction by the date specified in the contract. The project manager will oversee activities of the construction manager and separate contractors, and will monitor and assess their performance. The project manager will also:

- manage information
- monitor and control time, cost and quality
- administer contracts
- manage industrial relations
- resolve problems
- ensure compliance with plans, specifications and various regulations
- certify progress certificates including the final certificate.

Responsibilities in the commissioning stage

The project manager should endeavour to ensure that the project has been completed and its services commissioned, and that the facility is ready for occupancy by the principal or the principal's agents. Specific responsibilities of the project manager are to:

- ensure that defects have been repaired
- obtain a certificate of compliance from the local authority
- secure warranties from services suppliers and installers
- arrange for maintenance contracts for various services

- assist in the selection of tenants and the preparation of tenancy contracts
- bring the existing contracts to an end
- select a management consultant who will manage the facility
- co-ordinate fitouts of the facility.

6.4.6 Advantages and disadvantages of the PM method

The PM option of project delivery promises to deliver the most complex projects in a highly efficient manner. Because its success is totally dependent on the project manager's ability to lead, manage and motivate the interdisciplinary organisations that form the project team, the selection of a proficient project manager is one of the most important decisions of the principal. An equally important decision is to empower the project manager to match responsibility with authority. How much decision-making power to delegate to the project manager and the consequence of empowerment are contentious issues faced by every principal.

In general, advantages and disadvantages of the PM method of delivery are largely similar to those of the CM method. To avoid repetition in restating them, only those advantages and disadvantages that are particularly relevant to the PM method will be given in the following sections.

Advantages of the PM method

The following list of advantages of the PM method complements the list of advantages given for the CM method in section 6.3.5:

- The PM method provides a more professional approach to the overall management of the project.
- The principal may replace the project manager without adversely affecting any of the existing contracts.
- A lump-sum fee or an incentive-based fee to the project manager ensures motivation and performance.
- The principal is in total control over the rate of expenditure on the project.
- Project management is an ideal approach to handle fast-tracking.
- The PM method is suitable for use on projects that are complex in nature and where the risk is high.
- The PM method should attract even more competitive prices from separate contractors for reasons of fairness and equity provided by the highly professional project team.

Disadvantages of the PM method

The following list of disadvantages of the PM method should be read in conjunction with the list of disadvantages given for the CM method under section 6.3.5:

- The project manager may not have enough experience to deal effectively with industrial relations issues.
- The project manager needs to be appointed in the early part of the conceptual stage. This may not always be possible or convenient.
- The principal is exposed to a high level of risk.
- The project manager must be given functional control over resources including a fund for paying separate contractors.
- While the principal carries a lot of risk, the principal is not involved in day-to-day decision-making.

6.5

IN-HOUSE DEVELOPMENT METHOD

When the same organisation finances the project, develops its design and then builds it on its own land for either lease or sale upon completion, it has used what is commonly referred to as the in-house development method of project delivery. This method is frequently used in the housing and industrial sectors of the construction industry. Organisations using it are either property developers with their own design and construction facilities, or contractors who diversified into property development and merchant banking. The latter type of organisation using in-house development can particularly benefit from being independent of securing work through the tender system. It can also benefit by generating projects that are conceived during the periods of slow economic activity for delivery some time in the future when the demand is expected to improve.

6.6

PRIVATE FUNDING INITIATIVE

Privatisation, which involves the transfer of supply of goods or services from the government to the private body, is a growing worldwide trend. It was brought about by the lack of public funds to maintain such activities within the government domain as well as the need to make such services more efficient.

Private funding initiative (PFI) refers to specific methods of transferring the responsibility for supply of goods or services from the public to the private sector. The most common forms of PFI are outsourcing or contracting out, and concessional delivery methods such as BOT and BOOT.

Outsourcing of services traditionally provided by the

government is the most popular form of PFI. It refers to the transfer of supply of a specific service by contract to the private operator. Maintenance of public roads, distribution of electricity, gas and water, cleaning and maintenance of public buildings, hospitals and schools, and distribution of mail are a few examples of outsourcing (Frost 1997).

The main focus of this section is on concessional methods. The arrangement is that the contractor or a consortium of the contractor and another party (the operator), commonly known as 'promoter', will contract to build the project, for example a toll road, a bridge, a prison or a water treatment plant, operate the project either under a lease (BOT) or as an owner (BOOT), and at the end of a concession period, say 20 to 40 years, transfer the project to the principal.

The Sydney Harbour Tunnel and Sydney Harbour Casino were built under BOT contracts while Melbourne City Link project was built under a BOOT contract. Under BOOT, the promoter has ownership of the facility and may, if agreed to, use the facility to conduct a related business such as the operation of service stations and food outlets on a toll road.

6.6.1 Organisation structure of a concessional method

A typical organisation structure of the BOT method is given in Figure 6.5.

A structure of the BOT method of project delivery and its main components are discussed below with regard to the Sydney Harbour Tunnel project.

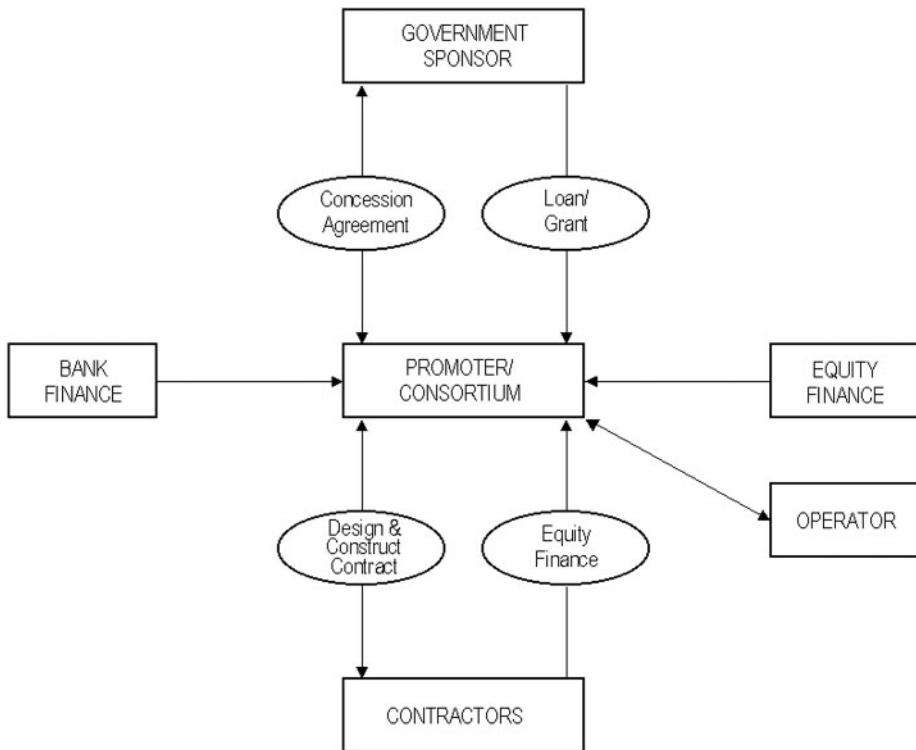
Government agency

The government agency is the principal who initiates the project, negotiates a financial deal with the project consortium or promoter and grants the concession to the promoter. It may also provide loans and guarantees of the promoter's income. The NSW Government was the principal for the Sydney Harbour Tunnel project. It granted the concession to the promoter to operate the tunnel for 30 years.

The government agency assumes the responsibility for some of the project risk, particularly the financial risk, since the government agency commonly provides loans and a guarantee of the promoter's or operator's revenue. The government agency also assumes the political risk (e.g. due to a strong opposition to the project), the economic risk associated with inflation and exchange rate fluctuation, and the maintenance risk related to the cost of maintenance after the end of the concession period.

FIGURE 6.5

A TYPICAL ORGANISATION STRUCTURE OF A BOT METHOD OF PROJECT DELIVERY



Promoter/consortium

The promoter is the party who develops a proposal, secures funding, builds the facility and operates it for the period of the concession. The promoter assumes most of the risk of the project.

The Sydney Harbour Tunnel Company is the promoter for the Sydney Harbour Tunnel project. It is a joint venture between Transfield (the Australian contractor) and Kumagai Gumi (the Japanese contractor/developer).

Funding

Concessional projects require both debt and equity capital. Debt capital may be secured in the form of bank loans or loans from the government agency. Equity funding is more complex and take many different forms, for example:

- equity capital brought into the project by promoters

- equity capital brought into the project by contractors
- equity capital raised through bonds.

The value of the Sydney Harbour Tunnel project was \$A738 million. The NSW Government provided a grant of \$A180 million and \$A223 million interest free loan. The remaining finance was raised in the form of a bank loan, bonds and equity capital of promoters and contractors.

Contractors

The promoter enters into a D&C contract with a contractor or a number of contractors to design and build the facility. A typical requirement is for contractors to bring a specified amount of equity into the project. Contractors thus assume the responsibility for a portion of the financial risk. Contractors also assume the responsibility for the design and construction risks.

The promoter of the Sydney Harbour Tunnel project engaged a number of separate contractors, including Transfield and Kumagai Gumi, to build the tunnel on design and built contracts.

Operator

The promoter may operate and maintain the facility upon its completion or may enter into a long-term contract with another organisation to operate and maintain it for a period of its concession. The operator assumes the risk of accidental damage, equipment failure, vandalism and maintenance. The decline in the level of revenue is another risk for the operator. This risk is commonly shared with the government agency that guarantees that it will not fall below a specified level. The promoter of the Sydney Harbour Tunnel operates and maintains the facility.

6.6.2 General comments

Sometimes the principal guarantees to purchase the production of the works, for example a minimum quantity of treated water. Sometimes the principal may provide a guaranteed income to the operator of the facility in the form of, for example, a minimum number of cars passing over the bridge or a minimum number of prisoners or asylum seekers for whose continued detention and upkeep the government provides payment.

Other times the operator pays a rent, sometimes in part based on turnover, such as in the case of a casino. There may also be a profit-sharing arrangement, as is common in the case of toll roads. The construction side of the arrangement is usually a straightforward D&C contract. It is the lease and guaranteed return for the

operator that are different. Usually the construction is carried out by one contractor and the lease and operation by another. This usually involves a partnership agreement between the construction contractor and the operator. Sometimes the principal does not pay the construction contractor anything and the operator pays both the principal and the construction contractor.

With more complicated arrangements, it is common for the parties to enter 'heads of agreement' before entering a formal contract or, as is often the case, a string of contracts including leases, financing agreements and guarantees. The problem with 'heads of agreement' is that they are either not binding at all, and not intended to bind anyone, or they are contracts, in which case they must cover all matters with enough certainty to create a contract that is valid and without ambiguity, which could give rise to disputes. In fact it is usually more difficult to draft 'heads of agreement' than it is to draft the final contract. At the stage of 'heads of agreement' the parties are usually optimistic and planning for the future; they don't want to think negatively; they don't want to think about what rights each will have against the other if their plans fail.

6.7

PERFORMANCE OF DIFFERENT METHODS OF PROJECT DELIVERY

Since the late 1960s, research studies have been attempting to assess the performance of the traditional method of project delivery in comparison to non-traditional methods. The first such study by Bromilow (1969, 1970, 1971) pointed to the negotiated contracts as being superior in performance to the traditional method. Later, Levido et al. (1981), Robinson (1987) and Naoum (1987) found managed delivery methods as also having superior performance. In recent years, more studies have confirmed that large and complex projects with a higher element of risk achieve better outcomes under non-traditional methods of delivery (Naoum & Langford 1990; Konchar & Sanvido 1998).

The direct comparison of different delivery methods is clearly difficult as projects are fundamentally different from each other and are exposed to different levels of risk. This is probably the reason for the small number of quantitative studies undertaken to investigate this issue. Although limited in numbers, the research consistently points to the excessive cost and time overruns of projects delivered under the traditional method.

IMPACT OF NON-TRADITIONAL METHODS ON DIFFERENT CONTRACTUAL PARTIES

The duties and obligations of the main contractual parties and their exposure to risk vary according to the type of delivery method used. The impact of non-traditional methods on principals, design consultants, contractors, subcontractors and other consultants will now be briefly discussed.

6.8.1 Principal

Non-traditional methods of project delivery have emerged to establish a more effective and efficient contractual framework for better control of the key objectives of cost, time and quality. The principal plays the key role as a direct member of a project team (except the PM method) and participates in the day-to-day decision-making. The principal's greater involvement on a project team is reflected in the principal's willingness to assume a higher level of financial risk.

6.8.2 Design consultant

Rightly or wrongly, much of the blame for the past cost and time overruns of traditionally delivered projects has been levelled at design consultants. Being responsible for both design and management functions in an environment characterised by the increased complexity of new construction projects, a sometimes volatile industrial climate, and inflationary pressures proved beyond the capabilities of some design firms, mainly because of the lack of management expertise.

The design consultant's role has changed significantly under managed methods of delivery. The management function has been taken over by the construction manager or the project manager, leaving the design consultant to concentrate on the design function only. After all, this is the function at which the design consultant excels most.

6.8.3 General contractor

The emergence of non-traditional methods has given general contractors an opportunity to diversify their activities away from being just contractors. Those who have acquired new knowledge and skills across the whole spectrum of project management were able to move swiftly to respond to new opportunities. This form

of diversification has helped contractors to reduce risk exposure and improve profitability.

6.8.4 Subcontractors

Under the agency CM and PM methods of delivery, subcontractors have an opportunity to bid for larger packages of work as separate contractors, with the added benefit of much greater security of payment since their contracts are with the principal.

Even under managed methods of project delivery, however, subcontractors are unable to escape the unethical bidding practices of unscrupulous construction managers, particularly under the guaranteed maximum price contract. When the risk of cost overrun is high, subcontractors are likely to have their bid prices 'bid shopped' by construction managers. Uher's (1990c) survey of subcontractors revealed the fear among subcontractors associated with the growing use of unethical 'bid-shopping' practices by construction managers engaged on the guaranteed maximum price contracts. The practice of bid-shopping will be examined in Chapter 10.

Uher and Runeson (1986) reported that subcontractors generally prefer to work under the managed forms of contract, but only because of the greater security of payment. Similar findings were reported by Barrie (1979), who showed that subcontractors respond favourably to different forms of managed contracts. The most serious problems faced by subcontractors on managed contracts were the design changes after the award of subcontracts, and unethical bidding practices.

6.9

IMPACT OF NON-TRADITIONAL METHODS ON THE CONSTRUCTION INDUSTRY

The use of non-traditional methods of project delivery since the late 1960s has made a visible impact on the construction industry. The changing roles and responsibilities of construction professionals have already been discussed. Other important issues connected with the use of non-traditional methods of project delivery will now be briefly discussed.

6.9.1 Fragmentation of the construction industry

The construction process is in the hands of experts operating at the professional, trade and technician levels, and the success or

the failure of any project depends on how well various activities are co-ordinated.

The more widespread use of non-traditional procurement methods throughout the construction industry has been instrumental in the emergence of new professional groups, for example construction and project managers, and in the greater number of consultants. In the past the building team comprised a principal, a design consultant, a quantity surveyor, a general contractor, a string of subcontractors, and the usual group of mechanical, electrical, hydraulic and fire protection consultants. Today, there are consultants for practically every specialised function, for example planning, scheduling, cost control, estimating, materials handling, risk management, IT, contracting, claims and disputes, arbitration, and personnel matters. What has happened is that the body of knowledge has been decentralised and fragmented away from the traditional sources of such knowledge. Consequently, much greater emphasis is now placed on the interdependence among the individual groups forming the construction team. The need for specialist consultants is undeniable, but whether the industry benefits from the large number of small but highly specialised groups or whether it would be better served by the larger multidisciplinary groups is a matter of opinion.

It would seem that this fragmentation is to the detriment of the construction industry in the long run. The co-ordination of activities of all the parties forming the construction team has always been difficult, because of a lack of co-operation, varying levels of proficiency displayed by individual parties, the deeply entrenched antagonism between some groups, or professional jealousy. Introducing more players into the game is likely to make things worse. Ideally, teamwork should be based on the mutual respect, co-operation and pulling in the same direction in order to achieve the desired objectives. This goal is yet to be achieved by many of the present-day project management teams despite the emergence of partnering (see Chapter 8).

6.9.2 Role of a general contractor

The shift of general contractors towards construction management and project management could have a long-term negative impact on the construction industry. General contractors are best placed and have the necessary resources to employ construction workers directly, to train apprentices and to provide leadership in the field of research and development so vital for the future of the industry. Subrogating the responsibility for

employing construction workers and for training apprentices to subcontractors, who have limited financial resources to respond adequately to such challenges, will have a potentially serious long-term impact on the quality of the workforce. With no clear solution in sight, subcontractors are likely to continue to be the main employers of labour for years to come.

ADMINISTRATION OF MANAGED METHODS OF PROJECT DELIVERY

7.1

INTRODUCTION

In Chapter 6 the main characteristics of construction and project management methods of delivery, their respective organisation structures and the key contractual links were examined in detail. The purpose of this chapter is to discuss important legal issues arising from the administration of managed methods of project delivery.

7.2

THE AGENCY CM METHOD

An example of a widely used agency CM contract is the NSW Department of Public Works and Services' Construction Management Contract (NSW DPWS 1989), reproduced by Tyrnil (1989: 18). The nature of the agency method is described in the contract in the following words:

The principal appoints the construction manager as managing contractor for the project.

When requested by the principal, the construction manager will enter as agent for the principal into contracts for the carrying out of construction work and procurement of materials. The construction manager will be the principal under the contracts but will include in the contracts the statement:

The construction manager contracts as agent for and on behalf of the principal and not so as to itself incur liability under the contract.

The construction contracts let by the construction manager are usually called 'separate or trade contracts' and the contractors are usually called 'separate or trade contractors'. They are not subcontractors because in law the separate/trade contract is between the principal and the separate/trade contractor. The separate contract will often be in the form AS2124-1986. For use with CM1, the Master Builders Association has published a form of separate contract called TC/CM1-1984.

If the separate contractor is not paid, the separate contractor cannot sue the construction manager but would be able to sue the principal. This is because the construction manager (albeit called 'the principal' under a separate contract using AS2124) is only acting as agent for the principal.

Similarly, if the separate contractor defaults, the principal can sue the separate contractor but not the construction manager. The construction manager can be liable to the principal for failing to carry out the level of management promised but the construction manager is not responsible for separate contractors in the same way that an ordinary contractor is liable for the performance of subcontractors.

The inability of the principal to sue the construction manager when a separate contractor defaults is seen by some as a reason for not using the agency arrangement. Others see it as an advantage because it avoids the adversarial role that exists in the contract under the traditional method. In the agency arrangement, the construction manager can fearlessly uncover defects by a separate contractor. In a traditional method, the main contractor is loath to draw any defects to the attention of the principal for fear of liability.

The most important feature of the agency arrangement is that the principal has on the principal's side an experienced contractor to assist the principal and look after the principal's interests.

In the agency arrangement, care must be taken with the use of the word 'ensure'. 'Ensure' usually means 'make certain' or 'guarantee'. Under the agency arrangement the essence of the contractual obligation of the construction manager or project manager is to use best endeavours to have the design consultants and trade contractors perform their respective contracts without breach and within time. It is not to 'ensure' that they do or to 'ensure' that design or construction is performed properly. If the word 'ensure' is used inappropriately, the construction manager or project

manager may become a guarantor of the performance of the principal's design consultants or trade contractors.

It is common to have a termination for convenience clause in the construction manager's contract of engagement. Then, if the construction manager is not managing to the satisfaction of the principal, the services of the construction manager can be dispensed with promptly without affecting the progress of construction. With separate contracts, being in law contracts with the principal, the principal can simply notify each separate contractor that the principal has appointed a new construction manager.

Sometimes the construction manager will contract with the principal to provide some design or construction. This should be kept to a minimum because it has the potential to create the adversarial position that the agency arrangement is designed to avoid. This was covered in the NSW DPWS CM Contract as follows:

When requested by the principal, the construction manager will design various works. The design will be carried out by the construction manager's staff and by consultants engaged by the construction manager.

The construction manager will be responsible to the principal for design work carried out by the construction manager's staff and by consultants engaged by the construction manager. (Tyrrel 1989: 18)

The requirement for the construction manager to provide design, as distinct from letting design contracts as agent for the principal, is not common in an agency method because it creates potential for conflict of interests. For example, if a separate contractor is slow, the separate contractor might blame the construction manager for being slow in providing design information. To cover up the construction manager's own inefficiency, the construction manager may attempt to put the blame on the separate contractor.

The requirement for the construction manager to provide design also makes it difficult to terminate the construction management contract quickly and efficiently when the construction manager is not performing satisfactorily.

Sometimes construction managers are not construction contractors but architects, engineers or other professionals specialising in management. Where this is the case, the construction manager may want the additional profit to be earned from providing design in-house.

There are two ways of fixing the contract price under an agency arrangement. The most common is to pay the construction manager a percentage calculated on the amounts paid to

separate contractors. The percentage may cover all the manager's work and in addition there may be a right to reimbursement of preliminary cost items.

The principal often seeks a lump-sum price for management. This is only satisfactory for projects where the scope of work can be fully defined before the management contract is let. If that situation exists, it is probably more efficient and economic to have a 'traditional lump-sum contract' covering all work. If the scope of work is not completely defined at the time the construction management contract is to be let, it will be very difficult to hold the construction manager to the lump-sum price.

A lump sum can only be binding where there are limits on what must be done for the lump sum. A limit may be a particular dollar amount for the total cost of construction or it may be a particular time, so that an overrun in cost or time will entitle the construction manager to a new fee. In cl. 7 of the Project Management Contract in Chapter 6 there is an example of a monetary upper and lower limit.

Another important aspect is the payment of separate contractors. Either the principal can pay the separate contractor directly, after the construction manager has certified the amount due, or the principal can give the construction manager funds from which to pay separate contractors. In that event it is important for the protection of the principal that the contract between the principal and the construction manager states that the moneys are held in trust for the principal until paid to separate contractors. The NSW DPWS CM Contract covered the question of payment to separate contractors as follows:

The principal will establish a trust fund from which the construction manager can from time to time draw moneys to pay contractors engaged by the construction manager as agent for the principal and consultants engaged with the approval of the principal.

The trust fund will be replenished by the principal as necessary and the construction manager will give the principal reasonable notice of anticipated withdrawals. (Tyrril 1989: 19)

Liquidated damages for delay are never included in an agency CM method nor is there a 'date for practical completion'. The only effective sanction for non-performance by the construction manager is dismissal. The agency arrangement is in many ways similar to a contract of employment of an individual. However, a 'date for practical completion' and liquidated damages will be included in each separate contract.

In a non-agency method these moneys would belong to the construction manager although, in a cost-plus arrangement, the amount (or part) recouped by the construction manager may be expressed as deductible from actual costs. In an agency method, whether or not the above paragraph was included, the moneys would belong to the principal.

It is important in an agency method to ensure that the principal has the benefit of and control over security and retention moneys. If the construction manager were to collect them and become insolvent, they might be lost to the principal. The principal would still have to account to the separate contractors for the moneys. 'Any security or retention moneys under any contract let by the construction manager as agent for the principal must be deposited with the principal'.

In a non-agency method, the principal would have no right to those moneys and no liability to the construction manager's sub-contractors to pay them in the event that the construction manager became insolvent. However, in a cost-plus construction management arrangement, the construction manager may have an obligation to use security to offset certain costs.

In an agency method, the insolvency of the principal might leave the construction manager without payment of the construction manager's fee, but it would not leave the construction manager liable to pay separate contractors. Therefore, where there is any possibility of insolvency of the principal, the agency arrangement offers the construction manager a measure of protection.

Where the principal is a government department or instrumentality, which will not readily become insolvent, the agency arrangement protects the separate contractors against the insolvency of the construction manager. The agency arrangement allows a smaller company to take on the role of construction manager where the company would be too small to undertake the financial risk of the whole project.

In an agency method there is a need to define in detail the services to be provided for the fixed percentage, but if there are services to be provided at cost (which is a common feature) the services are best described very generally. Then there is less risk of the construction manager being able to claim an increase in the percentage.

The services to be provided by the construction manager are described generally in the principal's invitation to tender, the construction manager's offer and in other correspondence, but this contract is the whole agreement between the parties and those documents do not form part of this contract and do not completely delineate the services which the principal may request. The principal

is not bound to give the construction manager any particular work. The construction manager will not be entitled to any remuneration over and above the remuneration provided in this contract no matter what services are provided or what changes occur. (Tyrril 1989: 18–19)

This may seem a very general description but when an individual enters a contract of employment the description of the work is no more specific. The salary (the percentage in the management contract) must be fixed but the description of the work to be done can be in general terms. A basic problem with many conditions of contracts in agency arrangement is that they try to spell out everything that the construction manager must do. This results in something being omitted or argument over the interpretation and leaves open the possibility of a claim by the construction manager for extra remuneration.

It also leaves open the possibility that if the quantity of work is less than anticipated, the construction manager could claim loss of the profit that would have been earned had all the work been carried out.

The construction manager or project manager is often selected because the construction manager or project manager employs particular individuals with particular experience. It is not uncommon to have a contractual provision that a particular person will be retained for the duration of the project and will be fully committed to the project. The problem is that no one can stop a person resigning. The most effective method of ensuring that the person stays until the end of the project is to have a different contract price if the person works on the project and a lesser price if the person resigns.

7.3

THE NON-AGENCY CM METHOD

In the non-agency CM method of delivery, described in Chapter 6, the construction manager, while retaining the function of ‘management’, also assumes the role of a contractor in the construction stage. The construction manager agrees to ‘manage’ and ‘construct’. The ‘management’ is only incidental to the obligation to construct. That is not to say that ‘management’ is not important, but unlike in the agency method it is not the basic obligation.

To justify the appellation ‘management’, the conditions of contracts often provide for a number of subcontracts and often provide that the contract price will be cost-plus, namely the cost

of the subcontracts plus a percentage or lump sum for the construction manager. It may even be that all design and construction is subcontracted, but the construction manager remains responsible for the work of the subcontractors as if it were a D&C contract or a traditional contract.

Usually the principal is required to approve of the subcontractors. Often the subcontractors are nominated subcontractors. Cases in the UK in the 1970s and 1980s (in particular, *Bickerton v. NW Metropolitan Regional Hospital Board* [1970] 1 All ER 1039 and *Fairclough v. Rhuddlan Borough Council* [1985] 30 BuildLR 26) pointed to the greater risk for the principal when a subcontractor was 'nominated' by the principal. This caused the term 'nominated subcontractor' to become less frequently used. Principals often strenuously deny that subcontractors chosen by the principal or jointly by the principal and the construction manager are nominated subcontractors. Nevertheless, from the point of view of the application of legal principles, the name given to a subcontractor does not determine whether the subcontractor is or is not a nominated subcontractor.

When under the non-agency arrangement the construction manager is paid the cost of subcontract work, it will usually make no difference whether a subcontractor is a nominated subcontractor or not. But if the construction manager has provided a fixed price or a guaranteed maximum price, then the difference between a nominated subcontractor and a subcontractor chosen solely by the construction manager may be very important. If a subcontractor chosen solely by the construction manager becomes insolvent or refuses to complete the subcontract work, the construction manager has no reason to require the principal to indemnify the construction manager. But if the principal has chosen the defaulting subcontractor, the construction manager may have a legal right to an indemnity against the extra cost of having the subcontract work completed by another subcontractor.

GST will be different depending on the role that the construction manager has. Under the agency arrangement trade contractors will invoice the principal directly. Under the non-agency arrangement they will invoice the construction manager, who will then separately invoice the principal. For example, assume that a trade contractor's progress payment is \$10 000 before adding GST. The GST that the principal will pay will be \$1000. But if the contractor is not a trade contractor but a subcontractor, the contractor will invoice the construction manager for \$11 000 and the construction manager will invoice the principal for \$11 000 plus \$1100 GST.

7.4

GENERAL COMMENTS ON MANAGED DELIVERY METHODS

Construction management and project management delivery methods are sometimes said to overcome the adversarial roles that arise in the traditionally delivered projects and to develop teamwork. The organisation structures of the CM and the PM methods and the nature of cost-plus contracts are sympathetic to promoting teamwork through open lines of communication between the main team members.

CM and PM contracts (other than the agency CM arrangement) often include a time for practical completion and liquidated damages, but the very nature of the contracts usually means that the principal cannot enforce the time covenant and cannot recover liquidated damages. If time and liquidated damages are important to the principal, the principal would usually be better advised to use the traditional method or a D&C method of delivery.

The problem with enforcing the time covenant in a management contract is that at the time the contract is let, the scope of the work has not been fully defined. A covenant to do an unlimited quantity of work within a fixed time is not legally binding. In essence, it is the same principle of law that prevents there being a lump-sum price for management contracts. A contractor cannot be held to a lump sum where the work to be done for the lump sum is unlimited.

In CM and PM contracts it is common for the principal to take out insurance for the works and public liability insurance in the names of the principal, the construction or project manager and all consultants, subcontractors and employees. The insurance is then said to be 'principal-controlled insurance'. If the construction manager is providing design services, the construction manager may be required to effect 'professional indemnity insurance'.

7.5

CONSTRUCTION PACKAGES

Where construction work is documented in packages (either separate or building components) the construction manager will be responsible for calling competitive bids and recommending contractors for the work. The contracts may then be signed directly

with the construction manager (in the non-agency arrangement) or with the principal with the construction manager acting as agent (in the agency arrangement).

Separate package administration is similar to the administration of traditional subcontracts, with the contractor attempting to maximise returns under the contract. The separate contractor will have to perform within the agreed contract sum and time. Adjustment of the contract sum is usually only by variations.

7.6

COST ADMINISTRATION

Where agreements are entered into without precise documentation, the basis for cost control is not a contract sum but a budget. The preparation of the budget, based on feasibility study assumptions, will often be a team effort subject to approval by the principal.

Once the budget is established, it should not be exceeded. This means that it must have allowances or provision for design development, cost escalation, delay costs and contingencies. Often there is no contract compulsion for the project manager or construction manager to keep the project to the budget, but if not then their professional reputation will suffer. Under the agency CM method and the PM method, the management contract frequently provides that the principal can terminate the construction manager's or project manager's services at any time without penalty.

Once the budget is fixed, cost control must be by regular cost reports, which forecast the cost of completing the project. Preparation of construction cost aspects should be undertaken by the construction manager and the total project cost forecast by the project manager. The reporting emphasis must be on forecast cost to complete, not historical cost records. Where cost trends are unfavourable, there must be provision for remedial action to be taken while it is possible.

Cost control of work packages is simple as they are usually lump sums, and cost reporting undertaken by the construction manager will be on a committed cost basis.

The difficult areas to predict and control are:

- contingency sums (control by limiting authority to approve variations)
- construction manager's reimbursables (control by negotiating as a lump sum)
- consultant's fees (control by lump-sum agreements).

TIME ADMINISTRATION

Programming of both design and construction activities is usually the construction manager's responsibility. In the agency CM method, there is no contractual obligation for any of the parties to keep to a program other than separate contractors who may have liquidated damages assessed against them if they fail to perform on time. Extensions of time are only relevant in the separate packages.

The underlying principle of managed contracts under the agency CM method and the PM method is that they are based on trust, professionalism and teamwork, and not on rigid contract conditions and the maximising of contract positions by each party.

INCENTIVES

Without liquidated damages or the ability to profit from improved performance, the issue of incentives for the construction manager and project manager to perform need to be carefully considered. Incentives provided could be in the form of a bonus for completing the project under the budget or a bonus for performance by exceeding agreed KPIs. Sometimes a contract includes an agreed target price either for the whole of the project or for the construction cost only, and the principal and the construction manager share in agreed proportions any amount by which the actual cost is less than the target cost. This works best when the target price is set after design is complete. If it is set beforehand, the construction manager either has no control over design, which is unfair, or the construction manager has a control over design and, to maximise the incentive fee, the construction manager may be tempted to skimp on design.

Unsatisfactory performance of the construction manager or project manager may result in their services being terminated; they may even be sued for professional misconduct or incompetence. There are few instances to date where either course of action has been taken. A termination for convenience clause is an important protection for the principal. A termination for convenience clause is one that enables the principal to terminate the services of the construction manager or project manager without assigning a reason. An example is cl. 11 of the Project Management Contract in Chapter 6, section 6.4.4.

PARTNERING AND STRATEGIC ALLIANCE

8.1

INTRODUCTION

The formalised concept of ‘partnering’, as it is presently known, emerged in the USA in the late 1980s (CII 1989) and in Australia in the early 1990s. The rise of partnering in Australia is directly attributed to the Building and Construction Industry Reform Strategy (BCIRS 1991) formulated by the Commonwealth Government and the findings of the Royal Commission into Productivity in the Building Industry in NSW (Gyles 1992). Gyles put forward numerous initiatives in an effort to define a new strategy for improving productivity in the building industry, one of which was commitment to partnering. Gyles saw partnering as a process that would gradually replace the old and entrenched ‘win-lose’ culture with an environment of trust, open communication and teamwork necessary for the development of a new ‘win-win’ culture.

The task of promoting partnering in Australia was given to the Construction Industry Development Agency (CIDA). Jointly with the Master Builders Association, CIDA published a guide titled *Partnering: A Strategy for Excellence*. The aim of this publication was to formalise the partnering process for use by firms working in construction. In its *Capital Project Procurement Manual*, the NSW Government also committed itself to the principles of partnering as part of its drive to improve productivity in the construction industry.

In a relatively short time, partnering has become popular in Australia, particularly in the public sector of the construction

industry. Hundreds of partnering projects have been completed. Despite the fact that partnering failed to work as intended in a number of recent projects, its largely successful past history has verified the soundness of the concept and its relevance to the construction industry. This is probably the main reason why major government principals continue to use partnering.

In recent years, the new terms 'alliance', alliance contracting' and 'strategic alliance' have emerged. While in some cases 'strategic alliance' represents nothing more than a repackaged partnering process, in reality 'strategic alliance' is a more advanced form of partnering. It establishes a business relationship between two or more parties which is mutually beneficial in terms of risk and reward sharing, pooling of resources, and integrating business functions.

The aim of this chapter is to define partnering and the partnering process, and examine its performance in the construction industry. Later in the chapter, the key aspects of strategic alliance will also be examined.

8.2

DEFINITION OF PARTNERING

Partnering in a broad sense is a process of establishing a 'moral contract' or charter among the project team members which binds each party to act in the best interests of the project and the team members. The main aim is to meet the project's objectives by working together rather than by confrontation.

Partnering in its simplest form is really nothing more than a return to some of the basic, common values that have been the foundation of construction activities in the distant past. 'Partnering is going back to the way people used to do business when a person's word was their bond and people accepted responsibility. Partnering is not a contract, but a recognition that every contract includes an implied covenant of good faith' (AGC 1991: 2).

Partnering has been defined by CII (1991: iv) as:

a long term commitment between two or more organisations for the purpose of achieving specific business objectives by maximising the effectiveness of each participant's resources. This requires changing traditional relationships to a shared culture without regard to organisational boundaries. The relationship is based on trust, dedication to common goals, and understanding each other's individual expectations and values. Expected benefits include improved efficiency and cost effectiveness, increased opportunity for innovation, and continuous improvement of quality products and services.

Partnering is based on the idea that the adversary phase of contracting should end the moment a competitive bid is accepted and a contract is formed. Before that point, contractors and subcontractors will compete to create the best construction program and the most competitive bid. But after the contract is awarded to the contractor, partnering will ensure that the contractor, subcontractors, designers, engineers and principal work together as if they were the one team or company.

An important component of partnering is synergy. Simply defined, 'synergy' is the process of combining the abilities of the project team members so that the team result is more significant than their individual efforts. In the synergistic environment all parties work together to achieve the best solution for the partnering team. In summary, partnering aims at:

- meeting the project objectives by co-operation, team building and mutual trust rather than by confrontation
- developing a win-win culture
- placing a value on long-term relationships
- developing an environment for a long-term profitability
- encouraging innovation
- achieving better buildability
- lowering the cost through value management;
- reducing the time and improving quality
- eliminating contractual conflict
- establishing a more dynamic organisational structure and clear lines of communication.

Gyles (1992) has foreseen the transition from the traditional construction processes to partnering in the terms given in Table 8.1.

TABLE 8.1

TRANSITION FROM THE TRADITIONAL PROCESSES TO PARTNERING

FROM (TRADITIONAL PROCESSES)	TO (PARTNERING)
Confrontation	Co-operation
Separate goals	Shared goals
Individual effort	Team effort
Working the contract	Working the project
Arbitration/litigation	Dispute avoidance
Linear process	Circular process

Partnering may be viewed as an umbrella concept that takes up aspects of total quality management (TQM) and small-group theory and applies them to reorient project teams to shared objectives, continuous improvement in quality and productivity, and customer focus.

CII (1991: 49–50) identified the important characteristics of TQM in successful partnering projects:

- culture of continuous improvement throughout the partnering organisation
- constancy of purpose for performance improvement
- environment and recognition systems which will encourage employees individually and in teams, to contribute their interests and energies toward improving the work they perform
- ongoing program of education and training in the techniques for continuous improvement
- elimination of barriers to continuous improvement
- methods of performance measurement applied to work processes
- continuous flow of goal-directed actions that improve the performances of all work processes
- everyone working with each other in customer/supplier relationships
- enhanced team-work amongst locations, functions and departments, and
- trust and confidence developed through participative involvement.

8.3

HISTORY OF PARTNERING

Partnering is not a new concept. In Britain the Bovis–Marks & Spencer relationship has existed since the 1920s. In America the first full partnering took place in 1984 between Shell, Parsons and SIP (NEDO 1991).

Because partnering adopts the principles of TQM, which was originally developed in Japan, it may be argued that it embodies some of the key principles of the Japanese corporate culture (see Kashiwagi et al. 1988; Kakato et al. 1989; CII 1991; Gyles 1992).

The concept of partnering, as it is presently known, was formulated in the USA and has been successfully applied since the late 1980s. The results have been favourable, with improvements in the costs and schedules of projects. The American experience provided a baseline for the development of partnering in Australia and other countries.

ESSENTIAL ELEMENTS OF PARTNERING

The Associated General Contractors of America (AGC 1991) identified the key elements of partnering as 'commitment, equity, trust, development of mutual goals/objectives, implementation, continuous evaluation and timely responsiveness'. Dombkins (1992) added an important component of 'leadership' while Cowan (1992) stressed the need for 'respect, trust and synergy' in partnering.

8.4.1 Commitment from top management

Commitment to partnering must come from top management. Initiatives driven by middle to low-level managers have little chance of success. Real commitment, not just lip service, is needed. The project team needs to feel that the top management of every stakeholder is fully committed to partnering. The brief history of partnering given above has shown how important this point is and how closely a project's performance is linked to commitment by top management.

Partnering is about changing the corporate culture from win-lose to win-win. But it is highly unlikely that any organisation could simply change its culture overnight. Realistically, this may take a number of years because change in the corporate culture involves people and not everyone is willing or able to change in a short space of time.

A new partnering culture is unlikely to be created by an internal directive or an outside contract. If the main objective of an organisation is to develop a win-win culture, change must first come from within the organisation itself. And because it involves people, a considerable effort is needed to help people change through counselling and training.

Ideally, an organisation should gain the first partnering experience through its own in-house partnering efforts. Its members will then be better prepared to participate in partnering at a project level.

Apart from commitment to partnering, organisations need to have at least one individual who will be totally dedicated to the concept of partnering and who will ensure its successful implementation within the organisation and beyond. This 'partnering champion' will maintain focus on the goals of the project and the partnering process, and will guide people towards their achievement.

A partnering champion should not be appointed; rather, a champion should emerge from within the ranks of top managers as someone who is willing and able to drive partnering and to build up a critical mass of support for it within the organisation.

The partnering experience has shown that government organisations are more willing to give commitment to partnering than their private counterparts. Despite their bureaucratic structures, public organisations have been able to make the necessary organisational changes to fit in with the principles of partnering. They have also provided leadership, which is vital to the success of partnering.

8.4.2 Trust

Partnering embarks on a major shift in attitude from no trust to trust. Creating a win-win relationship begins with respect, from which trust, and in turn a team approach, will emerge.

Trust is not something one can buy, sell, borrow or simply adopt. A prolonged exposure of construction personnel to mistrust in their day-to-day activities would significantly diminish their ability to adapt to a new win-win culture, at least in the short term.

Trust is an important characteristic of proactive people, while mistrust characterises reactive individuals. It follows that proactive people should have little difficulty adapting to partnering, while reactive people may experience problems unless they are given an opportunity to develop new interpersonal skills.

Special attention must be given to the general relationship between contractor and subcontractor. Experience has shown that contractors often find it difficult to accept subcontractors as equal contractual partners. This is reflected in the use of onerous contract conditions and bid-shopping practices. Considering that subcontractors carry out the bulk of construction, their involvement in the partnering process is of paramount importance. The traditional attitude of disrespect towards subcontractors must be replaced with an attitude of respect from which open communication and trust will develop.

8.4.3 Partnering workshops

Partnering workshops are structured meetings of project stakeholders that provide a forum for the establishment of mutual project goals, strategies for their achievement and the development of the necessary support processes such as issue or dispute

resolution and performance assessment. The workshops are conducted in the atmosphere of trust and openness with the emphasis on co-operation and teamwork. They are held at different stages of the project development:

- the initial partnering workshop is held just before the construction stage
- follow-up workshops are held during construction at approximately three-monthly intervals or when required
- the finalisation workshop is held on completion of the project.

8.4.3.1 The initial partnering workshop

The purpose of the initial workshop is to develop a partnering charter, which is a symbol of the stakeholders' commitment to partnering. It is a written and signed statement which defines a project mission and details mutually acceptable objectives. In doing so, it identifies potential problems for which it develops solutions, defines a process for the resolution of issues and problems, and specifies how partnering performance will be assessed. Since this is probably the first opportunity for all the key stakeholders to meet, the initial partnering workshop provides an opportunity to develop trust, openness and teamwork among the stakeholders.

The workshop is commonly held in a relaxed environment (preferably away from the site to allow participants to get away from their daily duties) conducive to open discussion. The number of participants is kept to a size appropriate to promoting efficiency and teamwork. Two days are commonly set aside for the initial partnering workshop. Usually the following issues form the workshop agenda:

(a) Learn to know one another

In this part of the workshop individual participants are introduced, job relationships identified, and the notion of effective communication, negotiation, conflict resolution and teambuilding introduced. The participants take part in a number of teambuilding, negotiation and conflict resolution activities. The aim is to focus on changing the attitude of the participants from the traditional 'us' and 'them' to the team-spirited 'we'.

(b) Develop mission statement and objectives

A mission statement will define the philosophy or creed of the project stakeholders. It focuses on what the team wants to be and to do, and on the values or principles on which the work of the team will be based. One specific example of a mission statement is given below:

We, the stakeholders of the Supermarket Retail Upgrade Project Team, will work in an open and trustworthy manner. We are committed to the timely achievement of project objectives through decisiveness and respect for the project stakeholders. In the process of project delivery, we seek to be honest and ethical, sharing the knowledge and understanding gained from working together in an enjoyable partnership.

Traditionally, principals establish project objectives which reflect their specific needs. Other project team members have little or no input into the development of these objectives but are required by contract to adopt them as mutual project objectives. With little or no ownership of such objectives on the part of individual team members, establishing teamwork is often extremely difficult.

At the initial partnering workshop, all stakeholders' interests are considered in creating mutual objectives in which stakeholders' interests overlap. The objectives must be clear, specific and agreed to by all the stakeholders. Some examples of specific shared project objectives are listed below:

- deliver 20 sites of the required mix and complete the project on time and cost budgets
- achieve better than industry standard workmanship, quality in design and delivery
- make a proactive response to problems and resolution of issues
- establish a long-term relationship between project partners
- work towards a cost-effective solution for each site
- minimise disruption to the franchisee
- minimise inconvenience to customers
- maintain safe work practices
- continuously improve design and project delivery
- enhance profitability of the partners.

(c) Identify problems and develop an action plan

Working in small groups, the stakeholders identify and prioritise potential problems that may prevent achievement of project objectives, and develop appropriate action plans.

The essential team attitude is built by understanding other stakeholders' risks and concerns and seeing where one's role in the contract fits in relation to others. In the process, individuals grow to know and understand the personalities with whom they will be working before problems arise. This investment in the human dimension can have very significant benefits for the life of the project and potentially beyond it.

(d) Develop issues/problems resolution process

Timely communication and decision-making not only saves money but can also keep a problem from growing into a dispute. At the partnering workshop the stakeholders develop mechanisms for encouraging rapid issue resolution, including the escalation of unresolved issues to the next level of management.

Partnering aims at resolving problems at the lowest possible level and in the earliest possible time. Team members are encouraged to resolve problems within their authority, at their level, without help or direction from above. If they are unable to resolve the matter within a stipulated time-frame, they must escalate it to the next level before it has an impact on the project. They cannot choose not to make a decision. If necessary, a problem must be escalated all the way up to the CEOs of the organisations concerned before a decision to use litigation is made.

In formulating an appropriate issues/problems resolution process, the stakeholders agree to adopt the following fundamental rules:

- The problem should be resolved at the lowest level.
- Unresolved problems should be escalated upward by both parties in a timely manner, before delays are caused.
- No jumping of levels of authority is allowed.
- Ignoring the problem or 'no decision' is not acceptable.

One advantage of an escalation policy is that more people are involved in problem solving and consequently there is a better chance of finding an acceptable solution. The escalation policy takes away the option of 'I'll do it the way you told me to, but I'll claim it' or 'Do it the way I told you to, and if you don't like it, claim it' (Cowan 1991: 31).

To encourage low-level problem solving, partnering calls for providing as many opportunities for communication as possible through regular face-to-face meetings. In the real world, people frequently tend to avoid bringing up problems in a formal setting until the problems have grown large. 'If you continually reinforce co-operative attitudes and encourage communication at all levels, people are much more apt to give early, informal warnings of trouble' (Cowan 1991: 31).

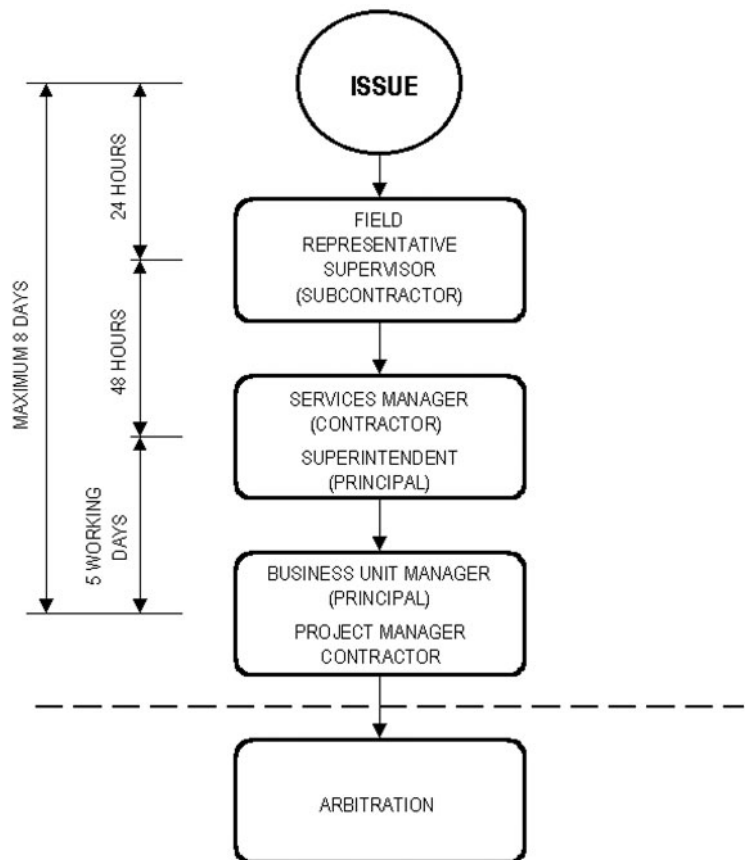
Effective problem solving requires the delegation of authority in a hierarchical manner. This ensures that the employee empowered with problem solving operates within the limits of his or her authority and escalates problems that exceed that

limit to the next level. Project managers need to be empowered to solve problems at their level, and the project designers need to be accessible during the construction period. Requests for clarifications or modifications, which traditionally require formal memos and letters, will be solved promptly by face-to-face communication.

Empowerment is being able to trust individuals with the maximum amount of power to make their own decisions where possible. Partnering not only promotes empowerment, it depends on it. Without empowerment, trust, teamwork and open communication will have little chance to develop and speedy resolution of problems will be difficult to achieve. A simple example of an issues/problem resolution process is given in Figure 8.1.

FIGURE 8.1

EXAMPLE OF THE ISSUES/PROBLEMS RESOLUTION PROCESS



(e) Develop performance assessment process

In order to ensure implementation, the stakeholders agree in the initial partnering workshop to periodically and jointly evaluate their performance against the mutually agreed goals to ensure the plan is proceeding as intended and that all stakeholders are carrying their share of the load. A vital part of evaluation is an assessment of the effectiveness of other partners as well as self-effectiveness. This is an excellent psychological ploy as no project stakeholder wants to be publicly singled out for not pulling their weight.

Assessment of performance is vital to project control. In partnering, evaluation is a co-operative effort performed by all the partners. The aim is to ascertain how the team is performing and what is the progress towards accomplishing the project goals.

Regular evaluations at monthly intervals are preferred. All project objectives and any other criteria for evaluation, as agreed in the partnering workshop and previous evaluation sessions, need to be included on the evaluation sheets.

Overall, the key concerns are: 'How are we going as a team?' and 'What is the progress towards accomplishing the project goals?'

All project team members participate in regular evaluations and their responses provide an important feedback for the project team as well as for the individual participants. Results of evaluations are tabulated and discussed at regular monthly partnering meetings. Examples of partnering assessment forms are given in Appendix A.

Apart from these subjective self-assessments, which monitor stakeholders' commitment to shared objectives, additional performance parameters can be applied to measure the performance of partnering projects, some of which are:

- number of disputes
- growth in the project cost
- change in the duration of the project
- safety factors
- analysis of change orders.

(f) Develop and sign the partnering charter

The stakeholders draft a document titled 'A Partnering Charter', which includes a statement of mission and a list of shared objectives. Although not specifically stated on the

charter document, the issues/problems resolution process and the process of performance assessment form a part of the charter.

The partnering charter is a demonstration of commitment to the success of the project. It is a symbol of commitment. While not intended to be a legally binding document, it represents an agreement of a higher order than the basic contract provisions. It is of a higher order because it binds the stakeholders together not out of fear of penalty or financial loss but rather out of a feeling of integrity and honour. A sample of a partnering charter is given in Appendix B.

8.4.3.2 Follow-up partnering workshops

The aim of follow-up partnering workshops is to review the performance of partnering, particularly with regard to commitment and involvement of stakeholders, the level of trust, teamwork, communication and the ability to resolve problems. Follow-up partnering workshops also serve the purpose of introducing and inducting new team members such as new subcontractors into partnering.

Follow-up workshops should ideally be held at three-monthly intervals, but their frequency may be altered depending on the level of partnering performance. They need to be carefully planned and structured and would generally be scheduled for one day. A follow-up partnering workshop generally deals with the following key issues:

- renewal of commitment to partnering
- team building
- review of performance
- reward for performance
- inducting new project staff and new subcontractors to the partnering process.

8.4.3.3 The finalisation workshop

The finalisation workshop is held on completion of the project. Completion signifies the end of various contractual relationships and the dismantling of the project team. It serves the purpose of critically assessing the overall performance of the project and those of individual stakeholders. It provides a forum for a close examination and analysis of the results, both positive and negative, with a view to developing more efficient and effective processes in the future. It also provides a forum for celebration and reward.

8.4.4 Empowerment

Empowerment is delegation. It lets people make their own decisions where possible. It encourages and trusts people to make decisions without fear of making a mistake and it helps them to overcome mistakes (Boyaland 1993).

Empowerment means being able to trust individuals with the maximum amount of power to do things as they see fit. This means 'encompassing maximum freedom as opposed to unleashing welcomed anarchy'. Empowerment requires 'personal commitment and the strength to be able to put oneself in the position of becoming vulnerable to others' (Topaz 1989–90: 4).

The partnering process not only helps to actualise empowerment to the project personnel of stakeholders, it depends on it. This ensures decision-making and problem solving at the lowest possible level of authority.

8.4.5 Education and training

Partnering involves change of culture, which some people may find difficult to make without assistance. Education and training is pivotal in helping people to make a paradigm shift towards partnering. Senior management of individual project stakeholders needs to recognise what partnering means to their organisations and what changes are required for their organisational structures and corporate cultures to fit in with the principles of partnering. In light of that, senior management needs to develop training programs in partnering for its staff at all levels of management. The training must focus particularly on developing skills in communication and on individual and group behaviour.

The ingrained adversarial attitudes of personnel are commonly the most significant obstacle. These attitudes can be reversed through specifically developed training programs.

8.4.6 Organisation design

Before entering into a partnering relationship, each stakeholder should review its organisation structure, policies and procedures, and where necessary modify them to fit in with the principles of partnering. This may involve some degree of restructuring. Important issues requiring close attention are:

- stakeholder's objectives
- decision-making: delegation of authority
- timeliness in problem solving

- co-ordinating mechanisms
- control and performance mechanisms.

Before making radical and permanent changes to its organisation, a stakeholder should first test the appropriateness of its partnering strategy on the first partnering project. The outcomes will provide necessary feedback on which the decision is made whether or not to diffuse partnering more broadly in the organisation. Ultimately, all levels of organisation should fit in with partnering. It would be unwise having senior management supporting partnering while allowing functional departments to follow a different agenda.

8.4.7 Leadership

No matter how thoroughly and methodically the partnering process is defined, its success ultimately depends on the calibre of people forming a project team and their ability to work with one another. It is essential that these people be selected by the management of their organisations not only on their ability to lead and manage but also on the strength of their commitment to partnering, and the ability to communicate and work within a team environment. They should be 'partnering champions' and should through their actions actively promote nurturing of partnering relationships and thus ensuring successful project outcomes.

8.4.8 Willingness to accept and learn from mistakes

The aim of partnering is to take away the adversarial 'win-lose' attitudes. When two or more organisations form a team, they should be prepared to accept each other's mistakes without acrimony. It is often said that the true test of the partners' commitment to each other is their reaction to the first major problem they encounter. Survival of the relationship lies not within acrimony but in their joint commitment to solve and learn from the problem together.

8.4.9 Facilitator

The facilitator assists in the running of partnering workshops. The facilitator's role is 'to keep the focus on and improve the process, to elicit from the stakeholders what they want out of the workshop, as well as their particular goals and objectives for the project. All stakeholders must be comfortable with the facilitator' (AGC 1991: 7). The US Army Corps of Engineers (USACE 1991: 3) describe the role of a facilitator:

Team-work, trust and communication are needed to sustain the process and specific facilitated workshops are recommended to build these qualities. A facilitated workshop is one conducted by an individual who is not part of the technical or management portion of the group, but is a third party, objective participant, skilled in team building and group dynamics, who has no vested interests in the decisions reached by the group. The facilitator manages the process of the meeting, not what is decided, but how these decisions are made. A facilitator must be reasonably neutral on the subject under discussion and his or her goal should be to reach a consensus among the team. Due to the intense nature of partnering workshops, more than one facilitator may be advisable.

Facilitators are needed until there is a broad understanding and acceptance of partnering throughout the industry. The scope of engagement for the facilitator includes among other things:

- initial top management training
- auditing the company structure
- training project participants
- preparation for the initial workshop
- facilitation of the workshop
- an ongoing evaluation process
- ongoing training
- preparation for mini-workshops
- facilitation of mini-workshops
- preparation for the finalisation workshop
- facilitation of the finalisation workshop.

Facilitators are expected to have the knowledge of and skills in:

- project management
- communication
- individual development
- problem solving
- group dynamics
- organisational design and development.

8.5

TYPES OF PARTNERING

The report of the National Economic Development Office describes two main categories of partnering (NEDO 1991):

- 1 project-based partnering
- 2 full partnering agreement.

8.5.1 Project-based partnering

Project-based partnering overlies the existing contract formed between the principal and the contractor. It is frequently used and works well with most methods of project delivery.

When adopting project-based partnering, apart from the inherent features of partnering, the principal also benefits from competitive tendering.

Project-based partnering should not be seen as being restricted to a principal-general contractor relationship only. It can and should be applied across a multitude of relationships involving different project team members, for example principal-design consultant, principal-project manager, general contractor-sub-contractors, and so on. Moreover, partnering should become a vehicle for the internal administrative and managerial conduct of individual organisations. This would enhance the ability of individuals and organisations to partner with other stakeholders at a project level.

8.5.2 Full partnering agreement (long-term partnering)

The original concept of partnering implied a creation of partnerships over a long period of time.

Partnering is a long term commitment between two or more organisations for the purpose of achieving specific business objectives by maximising the effectiveness of each participant's resources. This requires changing traditional relationships to a shared culture without regard to organisational boundaries. The relationship is based on trust, dedication to common goals, and understanding each other's individual expectations and values. Expected benefits include improved efficiency and cost effectiveness, increased opportunity for innovation, and continuous improvement of quality products and services. (CII 1989: 2)

The fundamental requirement of full partnering is that the principal establishes a long-term relationship with one contractor and provides this contractor with ongoing work. This approach works well in the private sector, but in the public sector where the accountability of public money is crucial, the use of full partnering may not be appropriate.

Long-term business relationships between two or more organisations are common, particularly in Japan.

Although they do not refer to those close business relationships as partnering, Japanese contractors are heavily involved in business relationships that contain the essential elements of partnering ...

Having established common goals, Japanese contractors and principals work together for a long period. As a result of the long-term relationships,

construction is accomplished under contracts that are negotiated. This eliminates the competitive environment and establishes a less adversarial relationship between the parties ...

Long-term relationships also exist between general contractors and subcontractors. Once a general contractor acquires a new project, nearly all the work is subcontracted. The subcontractors are chosen from a pre-selected group that has been working with the contractor for a long time. (CII 1991: 23)

This view was reinforced by Price Waterhouse (1990: 17):

Contracts are traditionally alien to the Japanese way of business, basically because Japanese prefer to place their trust in people rather than paper. Exposure to the outside world has led to the use of written contracts, but the traditional view is that these are secondary in business relationships. It is relationships, not contracts, which are negotiated and as a result documents are kept as brief and flexible as possible ...

The background to the Japanese viewpoint is an old belief that lawyers may destroy harmony by promoting their principal's position rather than pursuing compromise that benefits everyone. Also they might obstruct co-operation in business relationships.

Full partnering provides for unsupervised provision of services. The partnering agreement is commonly open-ended and continues until it outlives its usefulness. The agreements have either formal or informal mechanisms to promote co-operation between the parties. Normally the services are supplied by a joint organisation set up for the association. The partnering agreement is the contract and not a charter.

Full partnering removes the costly, wasteful and normally adversarial practice of competitive bidding, and by establishing a relationship which is longer than the normal project-by-project arrangement, it introduces numerous other beneficial prospects. In particular it facilitates the introduction and development of Total Quality Management (TQM) techniques; focuses on satisfying customer needs, the adherence to and familiarisation of safety procedures, training and resource development; and offers the opportunity for innovation. (NEDO 1991: 1)

One of the motivating factors for full partnering is the principals' need to optimise quality:

The continuous improvement process implicit in TQM cannot be achieved where the learning process has to be re-experienced time and time again. TQM in particular, needs a stable and continuous relationship to be fully effective ... Stability allows a contractor to plan and resource ahead. He can invest in skills, training and research, and in this respect, the spin-offs can also accrue in the industry, since it is these aspects that are ignored in the short-term relationships usually encountered in the industry as a whole. (NEDO 1991: 8)

The requirements for implementing partnering and TQM are very similar. Partnering is seen as complementary to TQM and requires a long-term relationship for its development. One of the main barriers to maximising the benefits of TQM in the construction industry has been the short-term nature of most projects. The long-term nature of full partnering provides the opportunity for implementing and developing TQM. On Bechtel's Chevron project, Deming's concept of continuous improvement was used with 'process improvement teams' being established and subcontractor selection processes changed from a cost basis to quality. Subcontractors were also involved in design issues (Kyzer 1991).

The benefits of full partnering are not immediate. Before they can be felt, a cultural change is needed within the partnering organisations. It may take many years before partnering arrangements begin to function effectively (NEDO 1991). Schreiner (1991: 27) quotes remarks made by Farmer of DuPont: 'If the contractor is looking just to maximise profits on just one job, then partnering is not for him ... The focus is on long-term benefits and not on short term difficulties'.

The long-term partnering of Marks & Spencer and Bovis has provided for a 'flexible attitude to scope changes': 'The no conflict contractual arrangement coupled with the positive mental attitude of our managers allows considerable scope for change in the project without the principal being penalised unfairly in terms of time and cost' (Fiels 1991: 8).

The work by NEDO suggests that the total extent of benefits of partnering occur only as a result of full partnering. Its research has found that most full partnering agreements develop out of less formal associations. Project-based partnering is seen as ultimately leading to the development of full partnering agreements.

According to NEDO (1991: 83), the successful development of full partnering is dependent on the following conditions:

- the ability of the principal to offer a significant and continuing core program of work
- consideration of the steps that would be taken in the event of an unexpected downturn in core workload
- careful selection of the right partner
- trust and confidence in the chosen partner
- commitment at high levels in each organisation
- an understanding of the requirements for a long-term relationship
- the basis for ongoing performance measurement and the means that will be established to provide the necessary datum against which it can be checked

- preparedness to adopt each other's requirements
- the training of staff to work under the culture of partnering
- the need for ongoing and effective team building
- the establishment of an overall joint management forum to overview the partnering arrangements.

8.6

PARTNERING PROCESS

Since project-based partnering is most commonly used in the construction industry, its operation and implementation is worth examining in detail.

Partnering can be applied to any type and size of projects irrespective of method of delivery. Its successful application involves two important steps:

- 1 preparation by the principal
- 2 implementation of partnering.

8.6.1 Preparation by the principal

Before entering into a partnership arrangement, the principal needs to audit and, where necessary, restructure the internal organisation to ensure its fit with the key principles of partnering. Important factors in preparation for partnering are set out below.

Commitment by top management

The principal's top management needs to initiate partnering and be seen as providing long-term commitment and focused leadership. The principal's organisation needs to have a partnering champion to guide the process and take responsibility for the moral, administrative and logistical support of partnering.

Selecting a partnering facilitator

A facilitator assists the principal in mobilising for partnering, training of the principal's top managers and, if necessary, training of the partnering team, facilitating partnering workshops and conducting an ongoing evaluation process. To ensure neutrality, the facilitator should not be a stakeholder and should not have any vested interest in the project. Under no circumstances should the project manager assume the role of a facilitator.

A qualified facilitator is particularly valuable in facilitating the initial partnering workshop by helping to build comfort, con-

fidence and openness in developing communication and trust among the stakeholders.

Aligning the principal's organisation with partnering

A facilitator may assist the principal in reviewing the culture and structure of the principal's organisation to ensure its alignment with the key principles of partnering, particularly with regard to empowerment, policies, procedures, speed of information flow, and interpersonal skills of staff.

Establishing selection criteria for a pilot project

Outcomes from the first partnering project will establish the long-term credibility of partnering. Principals need to take special care in selecting the first partnering project to give it the best opportunity for success. A pilot project should therefore be relatively simple, geographically easily accessible, and generally unaffected by outside environmental issues and other risk factors.

The pilot project is a learning process for the principal and other project participants, and its selection and management requires the highest priority.

Selecting and training principal's staff for the pilot project

The ability of the principal's staff to understand, accept and become committed to partnering will be a critical factor in the success of the pilot partnering project. The principal's staff considered for partnering should:

- be flexible (situational management style)
- have the ability to work in a team environment
- be respected by peers
- be willing and able to participate in a pilot project (try something new)
- have above-average communication and people skills.

The ability to communicate openly is probably the most important prerequisite for partnering.

For companies, both the principal and contractor, who have been working under the usual adversarial contractual conditions for many years, open communication is one of the most difficult aspects of partnering to accept. Indeed at an individual level there are probably certain people that will never be able to work under these sort of conditions and should not be involved in partnering arrangements. (NEDO 1991: 35)

If required, the principal's organisation must be prepared to train its staff in partnering. The 'culture shock' that partnering may bring must be recognised and properly managed.

8.6.2 Implementation of partnering

While the main emphasis of partnering is on changing the attitude and behaviour of project team members towards a win-win culture, achievement of this aim requires the formulation and implementation of a systematic partnering process. Its main aspects will now be discussed.

Making partnering intentions clear

Since a typical construction project passes through a number of largely sequential stages of the project lifecycle, it is important for the principal to decide at what point to introduce partnering to the project. The principal's intention to partner must be communicated to relevant stakeholders such as the designer, the main contractor and subcontractors.

The notification to designers and bidding contractors should emphasise details of the partnering process, aims, commitment and the desired standard of partnering competence. It should also emphasise the voluntary nature of partnering and that costs associated with implementing it would be shared equally with no change in the contract price. The principal's intention to partner may best be communicated to designers, other consultants and bidding contractors through a formal partnering briefing session.

Implementation in the conceptual and design stages

The conceptual stage of the project lifecycle focuses on the definition of the principal's needs. These are then expressed in the form of a design brief from which the design is developed. The principal commonly appoints a design consultant in the conceptual phase to assist in project definition, briefing and budgeting. In selecting a design consultant, the principal assesses, apart from the usual technical and commercial selection criteria, the designer's knowledge of partnering and the ability to partner with other project stakeholders.

Partnering may alter the duties and responsibilities of the design consultant. Because the principal is an active member of the project team and is able to communicate openly with other stakeholders, the principal may scale down the involvement of the designer as the contract administrator or superintendent in the construction stage.

Partnering is about trust, open communication, equity, shared goals and win-win outcomes. In light of these fundamental principles, the conditions of engaging consultants and particularly the terms of payment need to be carefully framed to be compatible

with those applying to the main contractor and subcontractors. A win-win outcome for all is unlikely to occur if for example consultants are paid a relatively low risk percentage fee reward (based on the construction cost of the facility), while the main contractor and subcontractors are paid rather high risk lump-sum fees. If the stakeholders are to share benefits, they must also be prepared to share risks. To that end, consultants should be engaged on fixed lump-sum fees where possible.

Value management forms an integral part of partnering and helps to optimise the cost of a project when implemented at the design stage. The concept of value management is not new. Apart from optimising the cost of the project, it also adds value to the design.

Since the partnering workshop brings all the key project stakeholders together and provides an environment conducive to team solutions, it also provides an excellent opportunity for applying the concept of value management to the partnering project. Project stakeholders are able to overview the design and the design documentation with regard to buildability, clarity of details, and co-ordination and integration of design documentation. They also gain an intimate knowledge of the project and its environment, are able to identify the key project risks, and can formulate a mutually agreed project strategy for achieving successful outcomes.

Implementation in the tendering stage

A formal pre-tender meeting with tenderers, initiated by the principal, serves the purpose of introducing tenderers to the partnering process designed for the project. It also briefs tenderers on the required partnering standards to be achieved. The principal may require bidding contractors to:

- demonstrate their ability to partner
- nominate a partnering champion for the duration of the project
- use fair and equitable conditions of subcontracts.

In most American contracts a covenant of good faith and fair dealing is included. It imposes an obligation of good faith and fair dealing in its performance and enforcement. It specifically refers to the following mutual duties:

- Each party will function within the laws and statutes applicable to their duties and responsibilities.
- Each party will assist in the other's performance.

- Each party will avoid hindering the other's performance.
- Each party will proceed to fulfil its obligations diligently.
- Each party will co-operate in the common endeavour of the contract.

The Arizona Department of Transportation (ADOT) inserts the following clause in its construction contracts:

Voluntary Partnering. The Arizona Department of Transportation intends to encourage the foundation of a cohesive partnership with the contractor and its principal subcontractors and suppliers. This partnership will be structured to draw on the strengths of each organisation to identify and achieve reciprocal goals. The objectives are effective and efficient contract performance and completion within budget, on schedule, and in accordance with plans and Specification.

This partnership will be bilateral in makeup, and participation will be totally voluntary. Any cost associated with effectuating this partnering will be agreed to by both parties and will be shared equally.

Australian courts generally do not recognise the principle of good faith and the leading Australian legal experts have failed to agree on the preferred approach to good faith and fair dealing in Australian contracts (Doyle 1993; Davenport 1994; Hibbert 1994; Thompson 1994).

Implementation at the construction stage

The principal's senior management notifies the successful main contractor personally and welcomes the contractor to the project. The principal, the contractor and any other project stakeholders meet to formalise the partnering process. Commitment to partnering at this level is essential for successful project outcomes. The meeting also agrees on a plan for an initial partnering workshop.

The initial partnering workshop defines a strategy for implementing and maintaining partnering. In summary, the initial partnering workshop:

- establishes a project mission statement
- defines mutual project objectives
- identifies potential problems that might prevent achievement of mutual objectives
- develops strategies for overcoming problems and achieving project objectives
- agrees on a partnering charter
- develops issues/problems resolution process
- develops a performance evaluation process
- agrees on an ongoing maintenance of the partnering relationship.

As a part of an ongoing maintenance of the partnering relationship, every effort has to be made to keep stakeholders' focus on the partnering process and its principles to ensure that a high level of trust, open communications and teamwork is maintained.

This requires the development of a dynamic strategy in the form of subsequent partnering workshops, meetings and performance evaluations. A typical schedule of partnering workshops and meetings is shown graphically in Figure 8.2.

8.7

PERFORMANCE OF PARTNERING

In its relatively short life, partnering has demonstrated its ability to improve the performance of projects. The evidence of partnering performance of US, Australian and UK projects will now be briefly discussed.

8.7.1 Performance of the US partnering projects

Partnering projects have largely been successful in the US construction industry. The first reported information on the performance of partnering was published by the CII (1989). The results given in Table 8.2 show a marked improvement in cost and time performance in comparison to non-partnering projects. The negative sign in Table 8.2 indicates 'reduction' in the cost outcome.

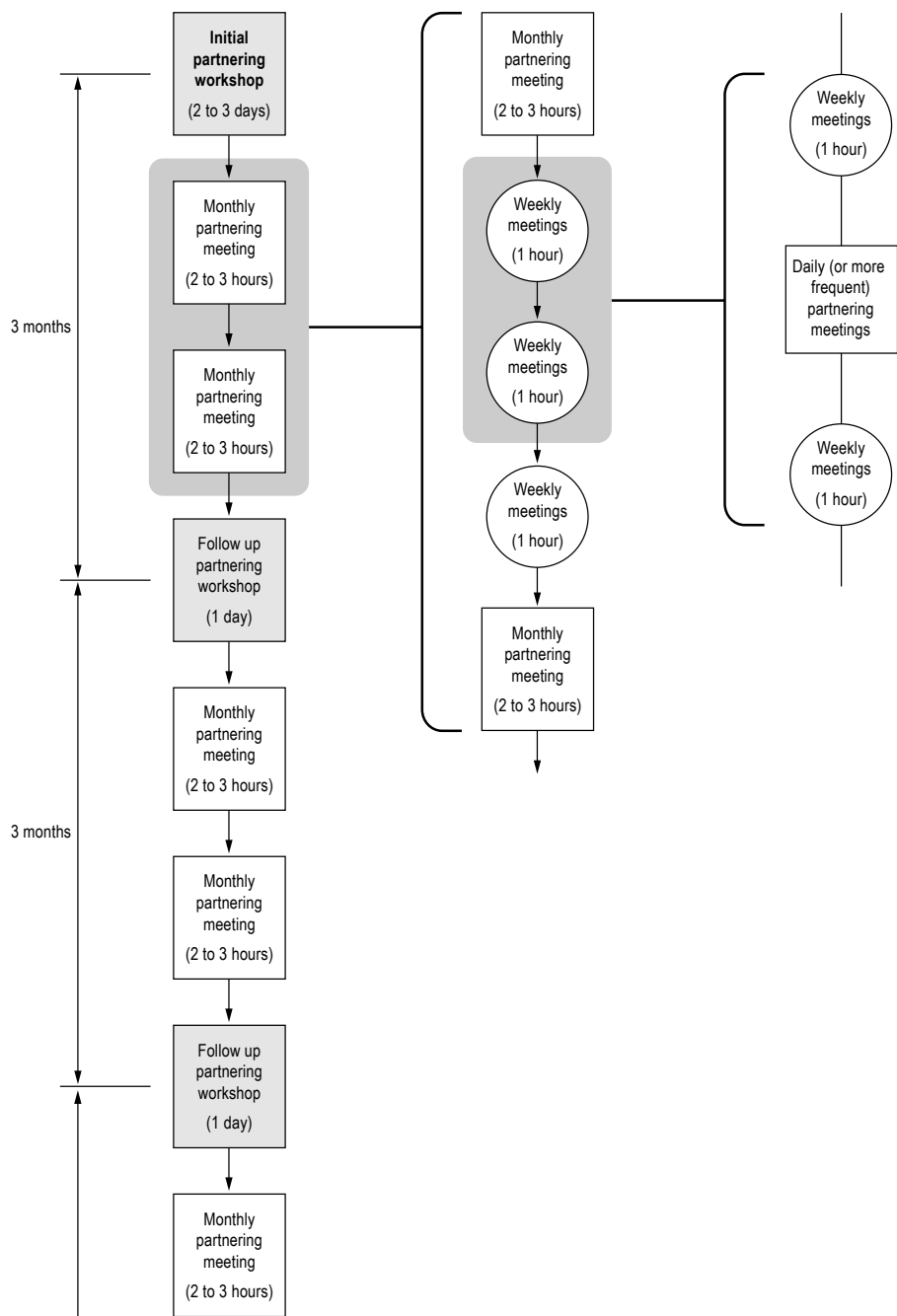
TABLE 8.2

THE COST PERFORMANCE OF PARTNERING PROJECTS

COST AREA	CONTRACTOR % COST CHANGE	PRINCIPAL % COST CHANGE
Direct costs		
Design	-4	-7
Procurement	-4	-3
Construction	-5	-5
Cost of rework	-9	-12
Administrative costs		
Management and support	-4	-9
Legal	-12	-10
Accounting and finance	-9	-9
Sales and marketing	-14	0
Contractor selection	-13	-14
Building and utilities	-3	0
Recruiting	-1	-6
Training	0	-1

SOURCE CII 1989

FIGURE 8.2
A SCHEDULE OF PARTNERING WORKSHOPS AND MEETINGS



A further study of partnering performance by the CII (1991: 10) showed that:

Partnering has helped the principals reduce project cost by 8 per cent and shorten schedules by 7 per cent. Contractors have reported that they have improved profitability by an average of 10 per cent. In addition, our survey results of realised improvements showed that engineering (design) costs were reduced by 10 per cent and administrative costs were reduced by 6 per cent.

Schriener (1991) reported on the performance of 18 partnering projects involving Brown & Root Corp. and Union Carbide Corp. Schriener concluded that productivity of the partnering projects was about 16–17 per cent better.

The United States Corps of Army Engineers experienced, as a result of partnering, better cost control, a reduction in cost growth, a significant reduction in paperwork and successful attainment of value engineering goals. Most importantly, none of the first batch of partnering projects ended up in litigation (Schriener 1991).

According to Howard B. Jones, the Chief of the Construction Division in the Portland District of the Corps:

Partnering provides an opportunity to work effectively with the contractor and a forum where we can discuss issues and develop mutually acceptable solutions. On a variety of projects, some of them quite large, we have seen impressive benefits in cost containment, on-schedule completion, value engineering savings, safety records, and organisational morale.

Case (1992) analysed a sample of partnering projects and reported:

- 80 per cent reduction in cost growth
- virtual elimination of time growth in schedules
- two-thirds reduction in paperwork
- millions of dollars saved through value engineering
- no outstanding claims or litigation
- significant improvement in safety records
- pleasure was put back in the process.

Dombkins (1992) summarised the performance of the US Corp of Army Engineers' partnering projects. The results are given in Table 8.3.

TABLE 8.3

PERFORMANCE OF THE US CORPS OF ARMY ENGINEERS PARTNERING PROJECTS

PERFORMANCE PARAMETERS	RESULTS
Number of projects	85
Total bid amount	\$900 m
Average time saved (completed projects)	7.55%
Value engineering savings (% of bid amount)	0.68%
Total cost savings (% of bid amount)	8.23%

SOURCE Dombkins 1992

The Arizona Department of Transportation introduced partnering in 1991. The first project was Rose Garden Traffic Interchange project. Since then hundreds of projects have been successfully built using partnering. The results are quite outstanding and apart from spectacular savings in cost, time and litigation, many other benefits have been realised, such as improved communication, teamwork, co-operation and an improvement in overall job performance (Dombkins 1992).

Dombkins reported on the performance of the first batch of 149 partnering projects, completed by ADOT. The results are given in Table 8.4.

TABLE 8.4

PERFORMANCE OF THE ADOT'S PARTNERING PROJECTS

PERFORMANCE PARAMETERS	RESULTS
Number of projects	149
Total bid amount	\$551 m
Average time saved (completed projects)	17.95%
Value engineering savings (% of bid amount)	2.1%
Total cost savings (% of bid amount)	1.8%

More recent studies continue to report positive results of partnering projects with only a few projects ending in litigation (Gransberg et al. 1999).

8.7.2 Performance of Australian partnering projects

Partnering has had a relatively slow start in the Australian construction industry, particularly in the private sector. Over time, however, its potential benefits have been realised by a large number of people in the industry, with leadership provided by the government principals. Overall, partnering has improved the performance of projects in:

- reduced litigation
- lower risk of cost and time overruns
- better quality and safety
- improved teamwork and communication
- higher trust.

The CII Australia carried out a survey (Lenard et al. 1996) of project stakeholders in the second half of 1995 to ascertain the extent of use of partnering and its performance. Eighteen partnering projects were selected for the study. Projects were predominantly in the public sector (91%) with two-thirds of them awarded under the traditional lump-sum contract. The majority of the projects (58%) were greater than \$20 million in value.

Almost three-quarters of respondents (74%) believed that partnering was successful on the sampled projects for various reasons including the use of external facilitators, commitment of senior management of all the stakeholders to partnering, little or no conflict between the partnering charter and the contract, participation of site supervisors and subcontractors in the partnering workshop, the use of the issue/dispute resolution and self-evaluation processes, and choosing the 'right' people for partnering teams.

The CII research identified financial success and reduced exposure to litigation as the two most beneficial outcomes of partnering. A list of benefits of partnering is given in Table 8.5. It is worth noting that the perceived benefits of partnering were positively and in most cases significantly correlated with the overall success rating of the partnering projects.

TABLE 8.5**PERCEIVED BENEFITS OF PARTNERING (GIVEN IN % OF RESPONSES)**

PERCEIVED BENEFITS OF PARTNERING	RESPONSES
Financial success	96
Reduced exposure to litigation	91
Lower administrative cost	87
Better quality product	78
Lower risk of delays	65
Lower risk of cost overruns	61

SOURCE Lenard et al. 1996

The main issues that hindered the performance of partnering were identified by the CII as commercial pressures, errors and problems with design documentation, and the lack of openness. The results are given in Table 8.6.

TABLE 8.6**PERCEIVED PROBLEMS WITH PARTNERING (GIVEN IN % OF RESPONSES)**

PERCEIVED PROBLEMS WITH PARTNERING	RESPONSES
Commercial pressures compromised the partnering attitude	100
Errors and problems with design documentation	86
Continuity of open and honest communication not achieved	86
The traditional win-lose culture too entrenched	71
The lack of participation of consultants in partnering (mainly design consultants)	71
The effectiveness of partnering impeded by bureaucracies of large government organisations	71
The lack of inclusion of subcontractors in partnering	57
The lack of teamwork	57

SOURCE Lenard et al. 1966

Conducting follow-up or refresher partnering workshops was recognised as the most important step in preventing problems. The development of documented case studies of resolved disputes for educational purposes, the general need to train project stakeholders in partnering, and the importance of selecting appropriate people were also identified as important solutions to partnering problems.

The establishment of a Dispute Review Board as an independent panel to help resolve issues before they develop into disputes (Fehlig 1995) was supported by just over a half of respondents, while the use of an award fee concept as an incentive to reward the contractor for good partnering performance was supported by 48 per cent of respondents. It is interesting to note that principals saw the use of an award fee more positively than contractors. The reason for a rather low support of an award fee among contractors was unexplained in the CII research. Because the concept of an award fee is relatively unknown in Australia, one possible explanation is that the respondents were simply not familiar with it and had little or no knowledge of its operation. This view is supported with one specific finding of the CII research, suggesting that of those principals who had used an award fee in the past, over three-quarters benefited from it and would use it again.

The CII assessed quantitative performance of partnering in terms of the value of claims only. The results are given in Table 8.7. The most interesting observation is that on successful partnering projects, claims in excess of 5 per cent of the contract value occurred on only 10 per cent of the sampled projects. In comparison, claims of similar magnitude occurred on all of the unsuccessful partnering projects.

TABLE 8.7

FREQUENCY AND MAGNITUDE OF CLAIMS

CLAIMS AS PERCENTAGE OF CONTRACT VALUE	FREQUENCY IN % ON SUCCESSFUL PROJECTS	FREQUENCY IN % ON UNSUCCESSFUL PROJECTS
Zero %	60	0
Less than 0.5%	10	0
Between 0.5 and 1%	0	0
Between 1 and 5%	20	0
Greater than 5%	10	100

The NSW Department of Public Works and Services is one of the major proponents of partnering in Australia. To date a large number of partnering projects have been commissioned by the Department. In February 1996 the Department's Policy Division prepared a publication titled *Report on the Project Performance Outcomes of Partnering and Non-partnering Projects* (NSW DPWS 1996). The report compared the performance of the first ten completed partnering projects with ten similar non-partnering projects. The aim was to determine if partnering reduced disputation within projects and improved outcomes. The main finding of the report will now be briefly discussed.

In terms of frequency of disputes, the partnering projects had registered approximately 50 per cent fewer disputes than the non-partnering projects. But the report provided no information on the monetary value of such disputes.

Cost growth and the number of variations measured for the partnering projects was up to 50 per cent lower than on the non-partnering projects. The average number of variations reported on the partnering projects was 6.5 variations per \$1 million of the contract value, with the variation cost increase of just over 3 per cent of the tender price. In comparison, the corresponding figures for the non-partnering projects were 12.2 variations per \$1 million of the contract value and 6 per cent respectively. This represents a significant saving of approximately \$30 000 variation cost per \$1 million of contract value on the partnering projects.

As a result of better project performance achieved by reduced variation costs and fewer contract disputes, an overall project saving to the principal represents approximately 2–3 per cent of the project cost. No significant differences between the partnering and the non-partnering projects were found with regard to time performance.

This research, carried out at RMIT, Melbourne, by Li and Green (1996), found evidence of project partnering enhancing outcomes of public infrastructure projects. The research data was obtained through a survey of a sample of 24 professionals involved on partnering projects, comprising principals, contractors and project managers. The focus of the survey was on subjective views and opinions of practitioners rather than on quantitative assessment of partnering performance. Nevertheless, the results provide a useful overview of experiences with and attitudes to partnering.

The results of the study showed highly positive experiences and enthusiastic attitudes to partnering among the sampled

respondents. The study demonstrated that partnering could significantly improve project outcomes in terms of time, cost and quality provided partnering was introduced as early in the project lifecycle as possible, with the 'right' people forming a project team and driven and supported by committed top management.

8.7.3 Performance of the UK partnering projects

The development of partnering in the UK construction industry has largely followed the US and Australian experience but its introduction has been slower. Many research studies have been carried out in the UK into partnering (Lorain 1994; Green & McDermott 1996; Loraine & Williams 1997; Bennett & Jayes 1998; Green 1999; Bresnen & Marshall 2000), however, only a sketchy information is available on the actual performance of partnering projects. It nevertheless appears that partnering projects have achieved better outcomes than non-partnering projects (Bennett & Jayes 1995, 1998).

8.8

PARTNERING PERFORMANCE INDICATORS

Simple, uniform and workable partnering performance indicators are needed for the measurement of the partnering performance. In most partnering projects, an evaluation process is largely subjective, focusing on regular self-evaluations of project stakeholders against shared project goals. Self-evaluation uses a subjective rating system to allow numerical tracking of performance and to provide a scale against which the stakeholders' implementation of the partnering process can be measured. It is a co-operative effort performed by all the project stakeholders. The aim is to ascertain how the project team is performing and what is the progress towards accomplishing the project goals. All project stakeholders are expected to participate in these regular evaluations and their responses provide important feedback for the project team as well as for the individual participants. Results are tabulated and discussed at regular partnering meetings.

Apart from these self-evaluations, additional qualitative and quantitative performance indicators can be applied to measure the performance of partnering projects. The qualitative trust-cost evaluation will track the level of mutual trust that exists between stakeholders and the impact of fluctuations in trust on the project cost. The CII (1993a) research has shown that when trust is high,

the project cost increase will be relatively low and conversely, when trust diminishes, the cost will show a greater increase.

The quantitative performance indicators provide empirical data on the performance of the project production process. The NSW DPWS (1996) developed the first example of workable indicators to measure the performance of partnering and non-partnering projects. These are:

- the number of disputes
- the project cost growth (total project cost/tender cost %100%)
- the project duration change (actual project duration/original project duration % 100%)
- the number of variations per \$1 million of the project cost
- safety factors such as the volume of accidents and the number of days lost due to accidents.

These may, if required, be further expanded to measure other important aspects of projects such as the extent of industrial disputes, the turnover of staff and the volume of contract documentation. Their benefit is not restricted to measuring performance of partnering projects only. They can just as easily be applied to assess performance of non-partnering projects, hence providing a means of a direct comparison between performances of partnering and non-partnering projects. On the down side, the cost of assessing partnering performance is not insignificant. The decision on whether or not to assess partnering performance using such indicators needs to be made very early in the life of the project in order to commit the necessary resources for data collection.

8.9

REWARD FOR PERFORMANCE

Project team members share in many benefits derived by successful partnering projects. These range from improved productivity and profitability, enjoyment of work and fewer problems to solve, to better quality and sharing in cost savings. The basic premise is that if cost savings have been achieved, the stakeholders should share in them. Due to the lack of published information on this issue, no clear picture emerges on whether or not this concept has been successful, but there is no shortage of anecdotal evidence suggesting that it has rarely been achieved.

An alternative to sharing in cost savings is the idea of an award fee. Fehlig (1995) described the operation of an award fee

as a financial incentive and reward to the contractor for good partnering performance on a large engineering contract worth \$US160 million. The principal set approximately 3.1 per cent of the contract sum as an award fee. The fee was divided into 13 fee periods of approximately four months each. At the end of each period, the principal assessed the contractor's performance and then decided what fee to award. The principal judged the contractor's performance according to four criteria: quality (50%), management (20%), timely performance (20%), and public relations/community impact (10%). These four criteria matched the shared goals of the partnering charter. The aim of both the contractor and the principal was to earn and award 100 per cent of the fee. The full award earned by the contractor would clearly indicate a win-win result for both contractor and principal. On this particular contract, the contractor passed a portion of the award fee to the main subcontractors. A similar approach, although on a smaller scale, is being adopted in Australian partnering projects, though an award fee arrangement is generally restricted to contractors only.

Award fees can be expressed in many different formats. One possible approach, developed by Uher (1999), is to link the contractor's progress claims to the contractor's performance. In this case, a mathematical formula can be applied to adjust the amount of a progress claim according to the contractor's (i) partnering performance and (ii) specific project performance indicators such as meeting cost and time targets. Partnering performance is measured against all the shared goals of the partnering charter, while the principal assesses specific performance indicators. The maximum level of the bonus will be determined and may be in the region of 3–5 per cent of progress claims. The following hypothetical example demonstrates the calculation process for a progress claim.

Assume that the contractor's current progress claim is \$156 000. The contractor can earn up to 3 per cent of contract sum in bonuses, 1 per cent for a satisfactory partnering performance, which is assessed using a typical partnering evaluation process, and 2 per cent for meeting specific performance indicators. In the current award fee period, the contractor's partnering performance was assessed as 4.5 (on the scale from 5 to 1 where 5 is maximum); the contractor doesn't earn any award fee if the contractor's performance is 3.5 or lower. Information on the contractor's available and earned award fee in the category of partnering performance is given in Table 8.8.

TABLE 8.8**THE AVAILABLE AND THE EARNED AWARD FEE BASED ON PARTNERING PERFORMANCE**

PARTNERING RATING (5 MAX. AND 1 MIN.)	MAX. AWARD FEE (1%)	EARNED AWARD FEE
5	0.01	n/a
4.5	0.007	0.007
4	0.005	n/a
3.5 and lower	0	n/a
Total		0.007

The project performance indicators are quality, cost, time and safety. They have been compiled for this award period and converted to values on the scale from 5 to 1, where 5 is maximum. They are given in Table 8.9 together with weights for each performance indicator.

TABLE 8.9**THE AVAILABLE AND THE EARNED AWARD FEE BASED ON PERFORMANCE INDICATORS**

PERFORMANCE INDICATORS AND THEIR WEIGHTS	ASSESSED PERFORMANCE	MAX. AWARD FEE (2%)	EARNED AWARD FEE
Quality (20%)	4.5	0.004	0.003
Cost (30%)	4.5	0.006	0.0045
Time (30%)	3	0.006	0.000
Safety (20%)	4	0.004	0.002
Total		0.020	0.0095

The value of the adjusted progress claim (APC) is calculated using the following equation:

$$APC = PC + [PC \times (PRB + PIB)]$$

where:

APC adjusted progress claim

PC progress claim

PRB partnering rating bonus

PIB performance indicators bonus

The actual value of the Adjusted Progress Claim is:

$$APC = 156\,000 + [156\,000 \times (0.007 + 0.0095)]$$

$$APC = 156\,000 + 2574$$

$$APC = 158\,574$$

This method of award fee is simple, transparent and unambiguous. It establishes specific performance awards that a performing contractor can earn. Because of its transparency and certainty, it has a potential to become a preferred profit-sharing method in partnering agreements.

8.10

LEGAL ISSUES IN PARTNERING

After the initial honeymoon period, which was heralded by a flood of supportive articles, partnering is now the subject of a rising number of critical and sceptical comments, particularly from within the legal profession. The concerns are mainly focused on the use of the doctrine of good faith in the partnering agreement (Mealey 1993; Davenport 1994; Hibbert 1994; Thompson 1994; Tyrrel 1997), the extent of disclosure of information in the partnering agreement (Quick 1993; Capelli 1994; Thompson 1994; Anon 1996; Pyman et al. 1996), the operation of promissory estoppel and waiver (Thompson 1994; Anon 1996; Pyman et al. 1996), legal opportunism under partnering (Davenport 1994; Lenard et al. 1996; DeFrieze 1997), and the legal implication of having a partnering charter side by side with a contract (Thompson 1994; Lenard et al. 1996; Tyrrel 1997). These issues will now be briefly discussed.

In Australia, contracts do not include an implied covenant of good faith (Davenport 1993a; Hibbert 1994) as do contracts in the USA. In the USA it is 'a standard of conduct implied into contractual relationships, and it provides legal support to the communication and trust that forms the basis of the partnering process' (Thompson 1994: 45). In Australia, it is uncertain what good faith really means (Davenport 1993a; Thompson 1994; Hibbert 1994). Davenport (1993a: 23) asserted that 'it is impossible to predict just what interpretation a court or arbitrator would put on the good faith clause. However, it is possible to predict that the interpretation will be contrary to the interest of the party who put the good faith clause in the contract'. He went on to say that good faith clauses are unnecessary and should therefore be excluded from construction contracts.

Quick (1993) and Pyman et al. (1996) expressed their concerns that the admission of liability or responsibility, which the concept of partnering encourages as part of an open and collaborative process of issues resolution, may invalidate professional

indemnity or other liability assurances. They claimed that by disclosing confidential and privileged information, which traditionally would not be shared, the rights of a partner might be severely diminished if litigation occurred. Capelli (1994) argued that the partnering agreement would be unlikely to function effectively and would be in danger of being frustrated unless the partnering charter included disclosure.

Promissory estoppel is concerned with 'enforcing representation or promises as to future conduct, including promises not to rely on a party's strict legal rights, in circumstance where it would be unconscionable to do so' (Thompson 1994: 45). Waiver is the intentional renunciation of a legal right. Consequently, if the partnering party chooses not to adhere to the strict provisions of the contract, it may be prevented from relying on the contract or the court may find that it has waived its contractual rights. The uncertainty arising from not knowing how and to what extent the contractual rights may have been altered by conduct of partnering parties is of major concern to the legal profession.

While a contract creates legally enforceable rights and duties, the partnering charter is usually not intended to do so. Davenport (1994) argued that contractual rights and duties are often unfair and encourage opportunism. He went on to say that 'in order to ensure that partnering can be a way of overcoming the traditional adversarial and litigious nature of the construction industry, it must be empowered to influence and at times override what would otherwise be legally enforceable rights and duties'. In other words, Davenport suggested empowering partnering with legal rights that a court would enforce but that would be based on concepts of fairness and equity between parties.

Pyman et al. (1996: 380) suggested that the notion of promissory estoppel and waiver may provide additional opportunism and legal risks during the course of a partnering project. If an agreement fails 'a party may assert that ... representations made may have in some way altered the risk allocation in the contract'. Thompson (1994) agreed with the legal ramifications that promissory estoppel and waiver may place on the partnering agreement. He cited the conflict of risk identification in the partnering charter and the contract documents as an additional situation where legal opportunism via promissory estoppel and waiver may occur.

Hibbert (1994) argued for better contracts on partnering projects to make partnering procedures and contracts consistent. This

was in order to ease tensions that may arise between contractual rights and procedures and the frank and open approach demanded by partnering. He suggested that the contract could express the aims and objectives of the partnering parties to avoid a possible conflict of interest that may arise when, for example, the project manager also acts as a partnering facilitator. He was also concerned about the possibility of contractual time bars being waived through the principal's active and collaborative participation on the project team, while Thompson (1994) warned against inconsistencies between provisions of the charter and the construction contract.

Clearly, a greater attention to detail is needed when formulating contract conditions for partnering projects to overcome legal concerns and to ensure as close compatibility as possible between the contract and the main principles of partnering.

8.11

STRATEGIC ALLIANCE

Partnering has largely been applied to shorter-term, project-based relationships. A long-term partnering relationship that may in part involve outsourcing is commonly referred to as 'strategic alliance'. It is a business relationship between organisations wishing to share risks, pool strengths, or integrate business functions for mutual benefit (Wood 1998). The fundamental principle of an alliance is to promote trust and mutual concern for each partner's business needs. In the construction industry, a strategic alliance is mainly formed between the principal and the contractor with the aim of sharing resources, technology and profits for a long period. It may be formed for one project or extend over a number of projects.

To date, there is no generally accepted definition of the term 'alliance contracting'. There have been some construction projects which are said to be 'alliance contracting'. The term seems to be used to describe a unique contract or a unique group of related contracts for a major project where the principal has agreed to accept greater risk than is common, even the risk (and consequent costs of rectification) of errors or mistakes by other participants in the project. In most projects, the principal accepts specific risks and the contractor accepts other specified risks. However, a project might be so usual and involve so many risks that to obtain suitable contractors the principal is prepared to accept risks such

as the principal would have if the contractor were in-house, like an employee. Generally speaking, if an employee makes a mistake, the employer cannot sue the employee but must wear the loss. On the other hand, an employee may earn a bonus if the employee brings in rewards for the employer. The term 'alliance contracting' has been used to describe a relationship that reflects a mutual trust and liability-reward relationship closer to an employee-employer relationship than an arm's length contractual relationship.

While the name 'strategic alliance' is relatively new, the process of establishing a long-term relationship with a preferred supplier, subcontractor or consultant has a fairly long history. Many firms, such as IBM, Boeing, Xerox, Ford, Du Pont Fluor Daniel and many more, have for many years benefited from this process.

Benefits received from a strategic alliance relationship positively impact on a range of business activities such as finance, marketing, management, labour and technology (CII 1993b; Bennett & Jayes 1995). The realisation of such benefits is naturally dependent on establishing a successful alliance and sustaining it throughout its period.

Outsourcing does not automatically create strategic alliance. In the absence of an explicit intent to develop a long-term relationship based on shared goals, trust, a mutual concern for each partner's business needs, an equitable risk allocation and a set of contract conditions sympathetic to the principles of alliance, outsourcing is nothing more than another project delivery method. Most examples of outsourcing projects in Australia are just that. Nevertheless, encouraging signs are beginning to emerge that point to a growing interest in the concept of strategic alliance across a wide spectrum of participants in the construction industry, particularly government principals. Although the exact number of Australian strategic alliance projects is unknown, the popularity of the process in the construction industry is on the rise (Lendrum 1995; Ricketts 1997; Abrahams & Cullen 1998; Guthrie 1998; Lee 1998; Wood 1998). Emerging industries such as IT and telecommunications also benefit from the concept of strategic alliance contracting.

Strategic alliance has already demonstrated its potential as a highly effective tool for delivering longer-term construction projects through a focused and mutually beneficial business collaboration of the partners, and better utilisation of resources and technology (Bennett & Jayes 1995).

8.11.1 Reasons for forming strategic alliances

Yoshino and Rangan (1995) identified innovation, the need to balance scale, specialisation, efficiency and flexibility, and to capitalise on an opportunity to enter global markets as the main reasons for forming strategic alliances.

Innovation

Alliances may assist innovation directly and indirectly through:

- sharing of new technologies
- pooling of research and development resources
- accessing new entrepreneurial cultures and skills.

Balancing scale, specialisation, efficiency and flexibility

Strategic alliances offer an opportunity to share expertise, skills and best practice, and in doing so they help to create distinctive specialisations and competencies of partner organisations necessary for the development of new markets.

Access to global markets

Strategic alliances provide an opportunity for smaller firms, which otherwise would be unable to enter global competition due to the lack of adequate capital and poor access to resources, to access global markets and be internationally competitive.

COMPETITIVE TENDERING

9.1

INTRODUCTION

A construction contract between the principal and the contractor can be formed in several different ways, for example by negotiation, by competitive tendering, or by a combination of negotiation and tendering.

Negotiated contracts are formed by direct negotiation between the principal and the contractor. This procedure may be applied in those circumstances when the work is so urgent that there is no time for inviting tenders, or when the principal believes that only one particular contractor is capable of building a project, or when spending time and money on tendering would be wasteful. The principal accepts that a contract price in such circumstances may be at a premium. Negotiated contracts are more common in the private sector than the public sector, where legislation (e.g. *Local Government Act 1993* [NSW] s. 55) or requirements of probity may mean that tenders must be called. Sometimes a private sector corporation or a group of corporations will approach a government with a proposition for the construction of infrastructure that is privately or partly privately financed. The result may be a negotiated contract. The Sydney Harbour Tunnel is an example.

Another approach commonly used by principals is to negotiate with two or three low bidders for the purpose of securing the best possible bid price. While not necessarily illegal, this practice may be viewed as contravening the principles of competitive

tendering and could possibly place the principal in breach of a tendering contract with unsuccessful tenderers. By playing one contractor against the other in a post-tender negotiation, the principal may benefit by obtaining the lowest possible cost, but at the expense of a risk that the lowest price will not be realised. This is because a contractor who is required to cut a bid price in order to win a contract will attempt to transfer some of the cost risks either back to the principal through claims under the contract or to subcontractors. Both of these contractor's defence mechanisms are highly undesirable to the principal. Claims under the contract will inflate the project cost and excessive risk transfer to subcontractors is likely to compromise their financial position and lead either to bankruptcies or to lowering quality standards.

The formation of a contract by way of tendering is the most common procedure. It will be discussed in detail in this chapter. The terms 'tender' and 'bid' are synonymous and are used interchangeably throughout this text.

9.2

FORMATION OF BUILDING CONTRACTS AND SUBCONTRACTS

A construction contract is to be distinguished from a contract for the sale of goods. A contract simply to manufacture and supply, for example, a kitchen cupboard is a contract for the sale of goods. But a contract to manufacture and install a cupboard in the house in such a manner that it becomes a fixture is a contract for work and labour (a construction contract), not a contract of sale.

Construction subcontracts can also be formed in several different ways, for example by traditional competitive tendering, through negotiation or through the combination of tendering and negotiation. The formation of a contract or subcontract is governed by principles of contract law. The rules relating to offer and acceptance, consideration and certainty are of particular importance. In normal circumstances the purpose of an invitation to tender is to obtain from the builder or subcontractor a firm offer capable of acceptance and hence of conversion into a binding contract. Problems may, however, arise when the offer is withdrawn before its acceptance.

9.2.1 Withdrawal of tender

A general rule is that a tender, like any other offer, may be withdrawn at any time before acceptance, even though it is expressed to remain open for a certain time, unless the proprietor has given consideration for the tenderer's promise to keep the offer open (*Bristol Cardiff and Swansea Aerated Bread Co v. Maggs* [1890] 44 CHD 616). So, unless the person inviting tenders has given it consideration, the tenderer can withdraw the tender at any time before it is accepted.

Attempts have therefore been made to give consideration to support the promise of the tenderer not to withdraw the tender. This may be done by inserting a provision into the conditions of tendering requiring the tenderer to agree to be bound by the conditions of tendering for a certain period in return for the principal undertaking to investigate and take into account this tender with the other tenders received by the principal. A promise to examine the tender constitutes in the legal sense sufficient consideration. The contractor is then bound not to withdraw the tender.

The reverse has also been held to apply. The principal in *Blackpool and Fylde Aero Club v. Blackpool Borough Council* [1990] 1 WLR 1195 was held liable for breach of contract when, due to an error, the principal failed to consider the tenderer's tender.

9.2.2 Subcontract formation

The formation of a subcontract usually involves two steps. First, subcontractors submit bids to the general contractor, who incorporates them in the contractor's tender. Second, the successful general contractor awards subcontracts after the general contractor has been awarded the main contract. This two-stage process raises an important question: at what point in time is the subcontract actually formed? This question commonly arises when the subcontractor whose bid was used by the general contractor in the tender decides, for whatever reason, to withdraw the bid after the main contract (a contract between the principal and the contractor) has been awarded to the general contractor. The precise time at which the subcontract is formed and the circumstances under which the subcontractor's bid can be withdrawn are uncertain and have been the subject of legal arguments in Australian (Commonwealth) and also US jurisdictions.

The most contentious point regarding the formation of subcontracts is the withdrawal of an offer before its acceptance. When a subcontractor communicates an estimate of the cost of a

job to the general contractor in the form of an offer, the subcontractor may withdraw the offer at any time until formally accepted by the contractor, even though it is expressed to remain open for a certain period (*Holman Construction v. Delta Timber* [1972] NZLR 1081). The exception to this principle is where at tender time the principal has given consideration for the bidder's promise to keep the offer open (*Bristol Cardiff and Swansea Aerated Bread Co. v. Maggs* [1890] 44 CHD 616). This establishes a separate contract whereby the subcontractor agrees that the subcontractor's bid will not be withdrawn on condition that the general contractor agrees that the bid will be considered by the general contractor. The rationale behind this principle is that if the offer of the subcontractor is to be held open, it must be supported by consideration. When the general contractor promises nothing in return for the offer, even though the contractor includes that subcontractor's price in the tender, the contractor cannot compel the subcontractor to form a contract unless formal acceptance of the offer precedes the withdrawal of the offer.

Another important common law principle stipulates that if an offer is not accepted within a specified period, it will lapse. If an offer is not to be kept open for a specified period, then it will lapse after a reasonable time. In the Canadian case *Northern Construction v. Gloge Heating and Plumbing* [1986] 2 WWR 649, a separate contract necessary for the purpose of holding the offeror to the offer while the offer remained open was addressed and a precedent established (Ramsey 1985).

Gloge, a mechanical subcontractor, submitted an offer to Northern Construction, a general contractor. Northern decided to incorporate the figure in the tender, naming Gloge as the subcontractor on the promise that the offer would remain open for a specified period. After Northern had been awarded the contract, Gloge discovered there had been an error in their offer and consequently withdrew the offer. Northern was forced to award the subcontract to another subcontractor, but began an action for damages against Gloge to recover the losses.

The judge saw the bidding process as consisting of two contracts. He identified Contract A as being formed upon submission of a bid by a subcontractor in response to an invitation to tender, which is a collateral contract to Contract B, the main or head contract, formed upon acceptance of the tender by the principal. Under contract A the subcontractor agreed to the terms and conditions set out in the invitation to bid. The judge ruled contract A between Northern and Gloge to be an option contract. The

submission of a bid by Gloge set the price and bound Gloge to the terms prepared by Northern. The judge found that Northern had exercised the option by submitting the tender to the principal before the discovery of the mistake. The contract was therefore binding before Northern knew of the mistake.

Cases from Canada and other countries have only persuasive authority in Australian courts. They may be cited and may influence judgments but they are not binding precedents. The Gloge case will undoubtedly be called up in future contractual litigation and it may even influence the development of contract law in Australia. It is clear that subcontractors may become exposed under common law or statute law (see *Trade Practices Act 1974* s. 52.) to the potential liability for inaccurate and erroneous bids.

9.2.3 Bid bonds

In the USA, contractors and subcontractors may be required to provide surety bonds at the time of tendering and after the award of the contract. Surety bonds are not used in the Australian construction industry. However, guarantees by parent companies or directors of performance by the contracting company are not uncommon.

A surety bond is a guarantee of the performance of a contract or other obligation. Bonds are instruments by which one party (surety) guarantees or promises a second party the successful performance or fulfilment of other obligations of a third party.

A bid bond may be required as a condition of pre-qualification. Pre-qualification in this context means that the surety has investigated the contractor or subcontractor enough to be convinced that it can safely issue a bid bond on a given project. The bid bond states that the contractor or subcontractor will enter into a contract if one is offered, and that the contractor will furnish whatever additional bonds are specifically required. If the contractor fails to do either, the bid bond specifies an amount that must be paid as damages. The damages may be actual or the difference between the contractor's low bid and the contract price that the principal must pay to the firm to which the principal ultimately awards the contract. The surety will be liable to pay the amount of damages stipulated in the bond itself. An alternative to a bid bond from a surety is a bid bond from the contractor or subcontractor who lodges a tender.

The use of bid bonds requires that contractors and subcontractors do not withdraw their bids and that they enter into a contract if one is offered. This will ensure much tighter control over the

accuracy of bids. Contractors and subcontractors would be more reluctant to withdraw their bids for fear of either paying a higher premium for future bid bonds or, in extreme cases, being unable to obtain bid bonds and therefore being unable to bid on future contracts.

9.3

TENDER DOCUMENTATION

The project manager is responsible for effective management of the tendering stage. The quality of submitted tenders is usually related to the length of time given to contractors to prepare tenders and the completeness of tender documentation. Contractors often complain about an unreasonably short tender period and incomplete tender documentation. Tender documents usually comprise the following:

- notice to bidders
- conditions of tendering including a form of tender
- general conditions of contract for the main contractor
- specification
- drawings
- bill of quantities (if any)
- other relevant documents.

Drawings, specifications and a bill of quantities are completed at the end of the design stage. One of the first tasks of the project manager is to prepare the remaining tender documents before initiating a competitive tender process.

It is almost impossible to prepare drawings, specifications and a bill of quantities without some errors, misdescriptions, discrepancies or conflicts. Most of these deficiencies are usually overlooked in the tendering stage because bidding contractors are unable to carry out a detailed scrutiny of the tender documents due to the very limited time given for tender preparation. The problem is that these deficiencies will not be discovered until the construction stage, by which time their correction will be carried out strictly in accordance with the conditions of contract. In most cases, this will cause overruns of the project cost and time budgets.

Most principals concede that the tender documentation will not be perfect and accept paying for the cost of corrections. An estimate of these costs will be added to the project contingency.

However, prudent principals may insist on limiting their liability by sharing with the design team the risk of cost and time overruns caused by the deficient tender documentation.

Clearly, by allocating more time for tendering, bidding contractors would have a better chance to closely scrutinise the tender documentation and uncover errors, omissions and discrepancies. These would then be resolved without increasing the risk of cost and time overruns. The project manager may also consider providing incentives to bidding contractors to encourage a close scrutiny of the tender documentation and the feedback of problems. In any case, whether rewarded or not, bidding contractors should report any errors in the tender documentation to the project manager and seek written instructions or guidance.

The project manager will now prepare the remaining tender documents. These are:

9.3.1 Conditions of tendering

The project manager prepares a set of conditions that will govern the operation and administration of tendering. These commonly refer to:

- the time and place for the submission of a tender
- clear definition of information, since submissions made to a different place and late submissions will not be accepted
- the precise form of tender
- the period during which a tender should remain open for acceptance
- whether or not the lowest or any tender will necessarily be selected
- whether a bid bond is required (information on bid bonding is given later in this chapter), or whether the principal will provide consideration in support of an offer in order to prevent its withdrawal prior to acceptance
- whether or not contractor design alternatives will be considered.

The form of tender, when submitted by the bidder to the principal, represents an offer. The project manager needs to clearly define all the matters that must be included by the tenderer if the form of tender is to become a legal offer. An example of a tender form is given in the Appendix (AS 1986: 47).

The conditions of tendering can be part of a separate contract (distinct from the construction contract) between the principal and each tenderer. If the principal adopts as a basis for accepting a tender some criterion that was not made known to tenderers, an unsuccessful tenderer may be able to sue the principal for breach of contract. It is important, particularly in the public sector, that the principal makes known to tenderers all the criteria on which

tenders will be judged. It is mandatory in local government contracting in New South Wales (Local Government [Tendering] Regulations 8(3)(b)).

In *Chinook Aggregates v. Abbotsford (Municipal District)* [1990] 35 CLR (Canada) 241, an unsuccessful tenderer successfully sued the Council for breach of contract where the Council had not disclosed to tenderers that it had a policy of giving preference to local companies. In *Blackpool and Fylde Aero Club v. Blackpool Borough Council* [1990] 1 WLR 1195, the unsuccessful tenderer successfully sued the Council where the Council failed to consider the tender because, mistakenly, the Council thought it was a late tender.

In *Pratt Contractors Ltd v. Palmerston North City Council* [1995] 1 NZLR 469 (Davenport 1995) the court awarded the unsuccessful tenderer not only the costs of tendering but also an amount equivalent to the profit that the tenderer could have made had the contract been awarded to that tenderer. The reason for the award was that the principal had failed to comply with the principal's own conditions of tendering. The lesson for all principals is, *if the principal has conditions of tendering or a tendering code, the principal can be sued for damages by a tenderer if the principal fails to comply with the principal's own conditions or code.*

The reason why the conditions of tendering in AS2125-1986 published at the back of the document are so brief is that brevity protects the principal. These conditions are:

Tenderers must complete the Tender Form provided and lodge it with any accompanying schedules or information in a sealed envelope endorsed with the Contract number at the place and by the time stated in the invitation to tender.

The Principal is not bound to accept the lowest or any tender.

It would be difficult for the principal to breach those conditions. At the other extreme are the NSW Government's *Code of Tendering for the Construction Industry* (NSW Government 1996a) and *Implementation Guidelines for the Code of Practice and Code of Tendering* (NSW Government 1996b).

9.3.2 Conditions of contract

In order to prepare a tender which the contractor expects to reflect the true nature and value of the work to be done, the tenderer must know what rights and obligations will exist under the contract. It is the project manager's responsibility to ensure that conditions of contract are prepared and made available to bidding contractors. Although the legal consultant will play the leading

role in drafting conditions of contract that would best reduce the principal's exposure to risk, the project manager's task is to argue for the need to develop reasonably fair conditions of contract that would promote co-operation between the principal and the contractor rather than confrontation.

Conditions of contract are generally described as 'the General Conditions of Contract' and are commonly available in standard contract forms. Most standard contracts allow for the inclusion of additional 'special conditions', which can be written into the general conditions or be an annexure. However, great care should be exercised when altering or deleting existing conditions, or including new conditions as they can substantially change the scope of the contract, particularly with regard to the allocation of risks.

It is also necessary to ensure that legal or commercial conditions, which may appear in other contract documents, for example in the specification or the bill of quantities, are not in conflict with the conditions of contract.

Although the principal and the contractor are usually already in contract as soon as a letter of acceptance is sent, a formal contract is often not signed until well after the tender has been accepted and, in some cases, well into the contract work. However, before its signing, additional negotiations may have taken place regarding the terms on which the work is to be carried out. This may give rise to future contractual disputes. To eliminate some of the problems that may occur, the contract conditions often expressly provide that until a formal agreement is executed, the contract between the parties is to be constituted by the tender invitation documents, the tender and the letter of acceptance. However, even without a condition to that effect, those documents would usually constitute the contract in the absence of a formal contract.

Accepting a tender 'subject to contract' or 'subject to the execution of a formal contract' does not usually override the fact that the parties are already bound. Those terms introduce ambiguity and will not help the person using them. If the contractor considers that the contract price is too low, the contractor might not enter a formal contract and might argue that there is no contract and therefore the contractor is entitled to a quantum meruit (a reasonable price). If the principal tries to introduce any new condition, the contractor might refuse to agree to it and might argue that 'subject to contract' simply means that there is a contract that will continue until another contract is made, and if another contract is not made, the original contract will be the only contract.

9.3.3 Specification

The function of the specification is essentially to describe the details of the work to be done, the quality of the materials and the standard of workmanship. Because the specification must complement the drawings, a close co-ordination of these two documents is essential, not just before tendering but also during the construction stage. Because more than one specification is usually required, a close co-ordination between the specifications is also necessary. The architect prepares the main specification, and specifications for specialty trades are prepared by consultants subcontracted to the architect.

9.3.4 Drawings

Drawings show graphically in detail the work to be done. They are in the form of plans, elevations, sections and details, and provide exact dimensions of all the construction elements of the work.

Different drawings are prepared for different purposes. The most common types of drawings are:

- architectural
- structural
- electrical
- mechanical
- fire-protection
- hydraulic
- landscaping.

Because different parties are involved in the preparation of drawings, it is essential to ensure their careful co-ordination. Many variation claims are raised by contractors purely because of the lack of co-ordination between the drawings and the specifications.

9.3.5 Bill of quantities

The bill of quantities is a document that lists estimated quantities of work in a systematic manner (usually in accordance with the Australian Standard Method of Measurement published by the Master Builders Association and Australian Institute of Quantity Surveyors). It is prepared primarily as a tender document and is made available to all bidders. Because the tender prices are based on identical quantities, price variations are the result of different unit rates and varying levels of overheads and profits, rather than mistakes in quantities.

When the bill of quantities is prepared as a tender document only, the contract may provide that the quantities will not become part of the contract, but the unit rates filled in by the successful bidder will become part of the contract and will be used mainly for the valuation of variations. The unit rates generally contain the contractor's element of profit and may be inflated for such items of quantities which, in the mind of the contractor, are likely to increase, for example rock excavation. Although a contract may provide that quantities in a bill of quantities do not form part of the contract, a tenderer misled by an estimate in a bill may have a remedy outside the terms of the contract. Section 52 of the *Trade Practices Act 1974* Commonwealth and s. 42 of the *Fair Trading Act 1987* (NSW) (or the equivalent Act in other States) provide a remedy in some cases of misleading conduct. It is not possible to contract out of that liability.

Sometimes the contract will provide for adjustment of the contract price if actual quantities exceed the estimated quantities in the bill by more than a certain percentage. That means that the principal assumes a risk for large errors in quantities caused by under-measuring, while the contractor assumes a risk for small errors.

Sometimes the descriptions and quantities in the bill are all 'guaranteed' and the contractor assumes no risk for errors in quantities. A statement that the bill forms part of the contract or that the bill does not form part of the contract gives no indication of the liability or otherwise of the principal for errors in quantities, and the statement should never be used. If the principal provides a bill to tenderers, the principal must be careful to say:

- to what extent, if any, the principal warrants that the quantities in the bill reflect the actual quantities of work
- what the liability, if any, of the principal will be for differences.

9.3.6 Other documents

There may be other documents, in the form of letters, sketches, geotechnical information, altered drawings and specifications, that may be regarded as contract documents. Difficulties may arise with the inclusion of such documents if they are not properly incorporated into the written contract.

Often a construction program in the form of a critical path schedule or a bar chart forms part of a contract. It may be prepared by the contractor or by a planning consultant. Apart from providing information to the principal on the proposed sequence of activities and their timing (the real value of such information is

questionable, particularly if the program is not regularly updated), it will be used to adjudicate the validity of the contractor's time extension claims and claims for the cost of delays. Contractors are generally more familiar with the concept of a critical path than principals or their agents, and are likely to hold an upper hand in any such claim negotiations. Without a valid reason, the inclusion of the critical path program as a contract document may well increase the principal's financial risk.

9.4

TENDER PROCESS

Contractors and subcontractors are usually chosen through open or select tender.

9.4.1 Open tender

Open tender refers to bidding without restriction, and any bona fide bidder who can meet the qualification requirements is entitled to submit a tender for the work. Open tender is used commonly by government agencies to ensure fair accountability of public funds and to avoid accusations of favouritism.

Open tender generally leads to a large number of bids being submitted, particularly in periods of economic downturn. This is seen by some as an advantage to the principal because the bids are expected to be more competitive. Others, however, would argue that the system has many inherent disadvantages such as:

- a higher cost associated with duplicating tender documents
- a higher cost of administration of tenders
- problems of selecting a best bid from a wider range of bids
- a high cost of tendering.

9.4.2 Select tender

Select tendering refers to bidding by a restricted number of bidders who are invited to tender. It may be approached in two ways: (i) as a single-stage tendering or (ii) as a two-stage tendering. A single-stage select tendering implies that the principal will select a specific number of bidders who will then be invited to submit their tenders. In a two-stage select tendering, the principal will first call for registration of interest from suitably qualified and experienced contractors, after which the principal will invite only a small number of the pre-qualified contractors to submit their tenders.

The Government Architect's Branch of the NSW DPWS has been operating a select bidding system since 1967. According to Thomson (1980), the select system has succeeded for the following reasons:

- The risk of failure of contractors and subcontractors has been reduced.
- Contracts by public authorities can be better regulated across the industry.
- The continuity of work for contractors and subcontractors has been improved.
- Costs of bidding have been reduced.
- The quality of work has been improved.

The tendering process, which leads towards the award of a main or prime contract to the main contractor, is complex and generally follows four distinct stages.

Stage 1

Subcontractors and suppliers of materials prepare bid prices and quotations to be used by main contractors.

Subcontractors and suppliers will be invited by bidding main contractors to supply bid prices for specific project activities and materials. A structure of the bill of quantities facilitates a relatively easy break-up of the bill into specific trade sections for use by bidding subcontractors. The bill of quantities is also highly suitable for use by suppliers of materials.

Stage 2

A main contractor compiles a tender either from the real subcontractors' bids or from target costs allowed for different trade items, or from both. Material costs, preliminaries and the mark-up costs are then added. Some contractors prefer to develop their own estimates of subcontract work.

A main contractor combines the best subcontract and supply bid prices with an estimate of preliminaries and mark-up to form a competitive bid price. It is interesting to note that on building projects, the bids of subcontractors and suppliers generally amount to at least two-thirds of a contractor's tender price (assuming that preliminaries range between 10 and 15 per cent, and the mark-up between 15 and 20 per cent). Values of subcontract bid prices clearly affect the competitiveness of a contractor's tender.

The total tender price is then a function of the main contractor's preliminaries, subcontractors' and suppliers' bid prices, the main contractor's mark-up, and the magnitude of the risk allowance. It can be expressed by the following equation:

$$TTP = f((GCP + \text{SUM SCB} + \text{SUM SB}) + GCMP + RA)$$

where:

TTP = total tender price

GCP = main contractor's preliminaries

SCB = subcontractors' bid prices

SB = suppliers' bid prices

GCMP = main contractor's mark-up

RA = risk allowance

It would be too simple when analysing a tender price to consider the main contractor's risks only. Subcontractors and suppliers are also exposed to risks and will make appropriate allowances for such risks in their bid prices. The magnitude of such risk allowances was assessed by Uher (1990a, 1990c) to be approximately 12 per cent (measured as an average maximum value for a sample of subcontractors surveyed).

Stage 3

The principal evaluates submitted tenders, selects the 'best tender' and awards the main contract to the winning main contractor.

General contracts and subcontracts are usually awarded to the best tenderer. How the term 'best tender' is interpreted undoubtedly depends on the perception of risk. Where the project risks are seen as insignificant, the 'best tender' will most likely be the lowest tender, provided it is within an acceptable margin from the principal's estimate. In the presence of a moderate to high risk, however, the term 'best tender' will commonly be a bid in the range between the lowest and the mean tender prices. The selection of the lowest tender on high-risk projects would normally be regarded as a risky decision.

Tendering is similar to auctions and requires knowledge of the construction industry, application of common sense, and a feel for the market. It is a complex process that brings together a number of bidders, each with only one objective in mind — to win a job.

Competitive tendering confers undoubted benefits on all organisations in the building industry. It reconciles the potentially conflicting desire of the principal for the most competitive price, and of contractors for the best attainable profit. In addition, the data generated by competitive tendering are useful to those individuals in the building industry who are involved in estimating future construction prices or forecasting future trends. (Flanagan 1986: 1)

Despite its complexity, competitive tendering ultimately leads to the selection of a successful bidder. But until the winning

tenderer is announced, the tendering process is riddled with uncertainty. Tenderers do not know how accurate, complete and competitive their bids are, whether they are free of mistakes, how good or bad various assumptions will be, or whether the tendering process will be conducted ethically. The principal may not be sure how accurate tender prices are and to what extent they cover the project risk. Nevertheless, the outcome of this stage should be the selection of the best tender. The process of selecting the best tender will be discussed in section 9.5.

Stage 4

After the award of the head contract, the successful main contractor will select subcontractors and suppliers on the basis of meeting or bettering the real or target cost provisions for different trades made in the tender.

Although post-tender negotiations between the main contractor and subcontractors have no immediate bearing on the main contract price, they may set in motion a series of events that may ultimately inflate the main contract price. Such events are almost always linked to unrealistically low subcontract prices and the presence of onerous subcontract conditions. Problems in executing just one subcontract may cause overruns in project cost and time.

9.5

SELECTION OF THE BEST TENDER

Traditionally, competitive tendering (bidding) is used to secure the best or the most economical price for the work. Competitive tendering encourages competition among bidders, and in so doing, presents a range of prices from which the best or most economical tender can be selected. The most economical tender is one that represents a price at which it is economically sensible for the contractor to execute the work and for the principal to invest in the development.

Research in the UK and Australia clearly shows that the lowest tender is not always the cheapest. Bromilow (1970) concluded that the costs resulting from delayed completion frequently outweigh the relatively small differences between lowest and next tenders, and that choosing a contractor merely by the lowness of the tender in itself is not enough to guarantee a satisfactory result from the principal's point of view. Flanagan (1980) reported that in Britain only 43 per cent of contracts achieved their bid mark-ups.

If one is to accept that the lowest tender is the best tender, then the following factors must be satisfied (Uher 1988a):

- The tender is genuine.
- All tender documents and other relevant information are available to all bidders.
- The tender price is within an acceptable margin of the principal's estimate.
- Tenderers apply competitive mark-ups.
- Risks are low.

However, it is often difficult to verify if all of the above factors have been satisfied. Some tenderers may not have wanted the job and submitted only a dummy bid so as not to jeopardise their relationship with the principal. Such a dummy bid is intended to be inflated but due to a mistake it may in fact be highly competitive in comparison to the other bids.

While the tenderers may have been provided with all tender documents, there is no guarantee that such tender documents are complete, accurate and unambiguous. In fact tender documents are rarely complete and accurate, and the amount of error, omissions and ambiguities is assessed by tenderers and included in tenders as a risk allowance. Tenders may also be inaccurate because bidders were given insufficient time to prepare them. Thus the decision to accept the lowest bid is clearly a risky decision.

It is interesting to note that some European countries use the concept of an average tender, which represents the idea of being economically justifiable, that is, the point at which all calculations by contractors converge. In Denmark, a tender near the average is selected after the rejection of the two highest and lowest tenders respectively, while in Italy, a tender nearest the average is selected.

Instructions to bidders commonly state that any or no tender will be accepted. The rejection of all tenders is, however, a serious move. While there may be a good reason to do so, the whole purpose of calling bids is usually to allow one of the tenders to be accepted. Calling tenders to ascertain a range of prices in order to negotiate a favourable contract with a 'friendly bidder' is an unethical and perhaps even unlawful practice, damaging the tendering process.

Under the open tender method, the rejection of the lowest tender may be justified where the bidder is unknown to the awarding party and where the risk associated with the bidder's ability to perform is high.

However, rejection of the lowest tender under the select method may have serious implications. Where this is done, the question arises whether select tendering is fair, and whether an

unsuccessful lowest bidder should be compensated for the cost of tendering. Is it morally right, after pre-selecting bidders in the first place, to discard the lowest tender just because it is lowest? Some think so: 'I normally knock the highest bid off, because invariably that is a throwaway price, and the bottom, because it is too low. I then get a feel for the real price of the bid' (Gosney 1983: 13).

The rejection of the lowest tender just because it is lowest is unjustifiable not only on moral but also on economic grounds, as it represents an indiscriminate waste of valuable resources. To encourage fair, serious and competitive bidding under the select method, the lowest tender should be accepted unless it contains mistakes. This view is strongly supported by Collier (1969), who advocates monetary compensation as one way to avoid apparent unfairness in the event of the lowest tender not being accepted. Cullen (1997) describes cases where courts have awarded damages where a tender has been passed over.

It may be said that the lowest tender maximises short-term profits of the principal under ideal conditions. However, construction facilities are being built as a long-term investment. The return on invested funds is a function not just of the time and the cost of construction but also of the quality of the work. The future costs of repairs and maintenance of low-quality buildings may far exceed the initial development cost. Thus selection of the most economical tender should in fact be approached from the point of view of lifecycle cost. It would, however, be unreasonable to expect the main contractor to choose subcontractors' prices on this basis since the main contractor has little or no interest in the lifecycle cost.

Traditionally, a main contractor carries most of the risk in all three important areas: cost, time and quality. From the principal's point of view, the critical risk arising from bidding is in the area of quality control. Where the accepted tender is below the 'true cost', the contractor can be expected to attempt to minimise losses by compromising on quality.

In the public sector, main contracts are usually awarded to the lowest bidder. This rule has been established to provide accountability in the use of public funds and to avoid accusations of favouritism. But considering that the lowest tender does not always prove the most economical, particularly where the quality of work is important, and accepting that there are no hidden or illicit reasons for making awards, then this selection process of main contracts involving public works is unlikely to provide best return on public funds.

Collier (1969) suggested a number of alternatives: that public works be designed and supervised by private companies instead of by public servants; that the qualification requirements of contractors should be made stricter; that there should be a move to select bidding.

Eilenberg (1987) pointed to the growing trend towards the use of select tendering as having an impact in both the public and private sectors of the Australian building industry on the grounds of economy and overall efficiency. Select tendering enables selection of the lowest bidder with a greater degree of confidence by virtue of pre-selection and reliance on past performance.

So how should the selection of the best tender be carried out? A model of effective tender administration is described in the next section.

9.6

A MODEL OF EFFECTIVE TENDER ADMINISTRATION

9.6.1 Pre-selection of tenderers

As was discussed earlier, the use of select tendering is more effective and less wasteful in terms of resources than open tender. The selection of bidders for select tendering could be approached in two ways: (i) inviting bidders by way of advertising to register their interest to tender for a given contract, and (ii) compiling and maintaining a list of competent contractors from which the most suitable bidders could be selected for each contract. Although each of these methods has advantages and disadvantages, the latter appears to offer a more disciplined approach for selecting bidders. Because it is wasteful to call for tenders from a large number of bidders, five to seven bidders should normally suffice. The bidders may be selected at random or in some predetermined order, giving an equal chance to all the bidders on the list.

9.6.2 Tender conditions

The tender conditions should be precise and unambiguous to provide the bidders with clear guidelines for the preparation of the bids. The awarding authority may consider including a condition that will bind the bidders to their offers for a period during which such offers will remain open. This may be done by

giving a specific consideration in support of the offers, or by requiring the submission of bid bonds. The latter approach is a form of surety.

Careful attention should also be given to the question of non-conforming tenders. When a bidder submits, in addition to a conforming tender, an alternative bid, which may offer some substantial benefits to the principal, the action may be interpreted in two ways: (i) the tenderer may be complimented for the ability to maximise efficiency of the design and construction process, or (ii) the tenderer may be condemned for an attempt to buy the contract by discrediting the design professionals and eliminating competitors. To prevent unnecessary squabbles or possible claims from other tenderers of breach by the principal of tendering conditions, the principal should clearly state in the tender conditions whether or not non-conforming tenders will be accepted.

If the contract includes a 'value management' or a 'value incentive clause', the tenderer may be better advised to suggest the alternative after the tender is accepted. This type of clause provides that if a contractor makes a proposal for a variation that is approved by the principal and saves money for the principal, the principal will pay the contractor a percentage of the saving. Value incentive clauses will be found in government contracts in the USA and in many government contracts in Australia, for example the Defence Department's purchasing contracts and the NSW Department of Public Works and Services' construction contracts.

9.6.3 Contract conditions

The bidders should be given precise information on the type of general conditions of contract, changes to the general conditions, and any special conditions. There should be no doubt in the bidders' mind as to the rights and obligations of a successful contractor under the terms of the contract. The use of standard forms assists in achieving this.

9.6.4 Documents

The preparation of tender documents is costly and time-consuming. The required documents must be complete and carefully coordinated with each other. Mistakes, omissions, ambiguities and discrepancies are likely to result in future variation claims. The principal would benefit from employing a project manager to oversee the design stage.

9.6.5 Submission of tenders

Tenders must be submitted strictly in accordance with the conditions of tendering. Late submissions must be rejected. Non-conforming tenders must be rejected unless called for in the conditions of tendering.

9.6.6 Tender evaluation

Submitted tenders commonly vary and the extent of variance can be substantial in terms of cost and/or time. The winning bid should be the best or the most economic bid in terms of all key project objectives.

The aim of tender evaluation is to perform a critical and thorough evaluation of the tenders received in order to ensure that the tender which is finally recommended for acceptance is the most advantageous to the principal from technical and commercial points of view. A team comprising the principal, project manager, main design consultant and quantity surveyor will perform tender evaluation.

A technique that generally fulfils the aim of tender evaluation is an analytical approach by which all factors considered important to the performance of the project are weighted in order of their relative importance. The submitted tenders are then examined critically against these set values.

To facilitate a fair and impartial evaluation it is important to ensure that all tenders are brought to a common basis. This can be done through a process of *tender qualification*. The tender evaluation team will draw up a list of items in the form of a checklist and will interview individual bidders to determine whether or not all such items have been priced. It should be clearly understood that this process attempts to qualify bids and under no circumstances should the tenderers be pressured to lower the bid prices. Important items in tender qualification are:

Principal's estimate

The principal's estimate prepared in the design stage by a quantity surveyor will often be used for assessing submitted tenders. It should be treated confidentially. An acceptable percentage variance from the principal's estimate should be determined for both technical and commercial evaluation.

Technical evaluation

This process is an appraisal of the tenderers' technical capability and management competence in performing the required scope of

work. All factors that are considered crucial to the performance of the project should be included in the form of tender. The tenderer is required to respond expressly to them. Such crucial factors may include:

- the contractor's resources and capabilities
- organisation of the proposed site team
- safety management
- cost and time management
- specialist abilities
- quality control/assurance plans
- engineering support by head office
- purchasing organisation
- other projects currently performed
- CVs of key staff personnel.

The tender evaluation team will rate the technical parameters of each tender submission on a predetermined scale (say 1 to 10) and calculate the total rated scores.

Sometimes by legislation (e.g. the *Local Government [Tendering] Regulations 1999* [NSW]) or the principal's tender conditions, the principal is bound to make known to tenderers the evaluation criteria proposed for the selection of the tender to be accepted. In those instances, the principal must strictly follow the specified evaluation criteria.

Commercial evaluation

Commercial evaluation is concerned mainly with the issues of tender price, but other issues such as financial status of tenderers, their market share, commitment to training of personnel, risk assessment plan, availability of resources, professional reputation, 'hidden' cost, and so on will be considered.

The tenderer should again be required to expressly respond to the commercial evaluation parameters, which will be set out in the form of tender. Each tender submission will be rated against the stated commercial evaluation parameters and the total rated scores calculated.

Overall weighted ranking

The tender evaluation team will need to decide if rated scores for both technical and commercial evaluations contribute equally to the overall rating of each tenderer. If they do, then the technical and commercial scores are totalled for each tenderer and a ranking order established. However, it is likely that commercial evaluation might be seen as contributing more substantially and consequently

might be given a greater weight than technical evaluation, say 60 per cent for commercial and 40 per cent for technical evaluations. The rated scores of each tender submission are then recalculated and the order of tenders re-ranked. A simple example of tender evaluation is given in Table 9.1. With 50:50 weighting of technical and commercial factors, the tenders A and B differ substantially in terms of their respective technical and commercial ratings, but there is nothing between them in terms of the total ratings scores. When different weights for technical and commercial evaluations are introduced, tender A scores higher than tender B.

TABLE 9.1

EXAMPLE OF TENDER EVALUATION

	TENDER A	TENDER B
TECHNICAL EVALUATION		
Head office support	5	8
Programming	8	6
Innovation in construction	7	6
Materials handling approach	5	6
Quality of management systems	5	8
Quality of site supervision	7	8
Subtotal	37	42
COMMERCIAL EVALUATION		
Tender price	9	6
Financial status	8	6
Availability of resources	7	7
Market share	7	8
Staff training	8	6
Professional reputation	8	6
Risk management plan	4	6
Subtotal	51	45
Total rating	88	87
SET THE WEIGHTS BETWEEN TECHNICAL AND COMMERCIAL EVALUATION TO A 40:60 RATIO		
Technical Evaluation (40%)	14.8	16.8
Commercial Evaluation (60%)	30.6	27.0
The final rating	45.4	43.8

Choosing the best tender

A process of rated evaluation of technical and commercial aspects of tenders provides an objective measure for ranking of tenders. It identifies and rates all the key technical and commercial factors pertinent to the project in a disciplined, fair and impartial manner. However, it needs to be clearly understood that it is only a management tool assisting in decision-making. The final decision rests with the tender evaluation team. The tender evaluation team may regard the rated evaluation assessment as the main criterion in selecting the best tender, but it may choose to use it as a guide only and apply some other criterion for selecting the best tender.

Contract award and contract signing

A formal acceptance of the contractor's tender/offer (whether in writing or not) is sufficient to bind the parties in contract. Although the start of the contract is not conditional on the formal signing (usually called a Formal Instrument of Agreement, for example see AS2124-1986, cl. 6.2), every effort should be made to have the contract signed before construction. This will ensure certainty of the knowledge of the conditions of contract under which the project will be executed.

9.7

COST OF TENDERING

Competitive tendering is not without cost to all parties involved. The principal must commit resources to prepare tender documents and to administer the bidding process for the head contract. Similarly, main contractors must provide tender documents for different subcontracting trades and administer the subcontract bidding process. In getting the bids prepared, bidders also commit resources. Only one main contractor and one subcontractor for each subcontract trade will recover bidding costs on any one project.

Kirkpatrick (1963) attempted to calculate the total cost of tendering for public projects ranging from approximately \$5 million to \$40 million (in 1963 monetary value), with \$1.2 million being an average contract value. Kirkpatrick assumed that on average ten main contractors, 60 ordinary subcontractors and 120 nominated subcontractors and suppliers would be involved in preparing bids and incurring bidding costs. The total cost of tendering was estimated to be 2.15 per cent of the final project cost. The breakdown of the bidding costs is shown in Table 9.2.

TABLE 9.2

THE BREAKDOWN OF BIDDING COSTS

PROJECT PARTICIPANTS	% OF BIDDING COST
Quantity surveyor	0.47
Main contractors (10 bidding)	0.58
Nominated subcontractors and suppliers (say 120 bidding)	0.60
Ordinary subcontractors (say 60 bidding)	0.50
Total	2.15

Cordell (1979) estimated the total cost of open and select tendering related to the main contract in public and private sectors (see Table 9.3). As the percentage cost values were calculated over the range of submitted bids, varying from three to 12 bids, rather than for a specific number of bids, the effect of an increasing and decreasing number of bidders on the cost of bidding could not be determined.

TABLE 9.3

THE BIDDING COSTS OF MAIN CONTRACTS (%)

BIDDING METHOD	VALUE OF CONTRACT (\$ 000S)			
	50–150	151–500	501–1000	Over 1000
OPEN TENDER				
Private	3.30	1.20	1.30	1.9
Public	3.00	3.10	1.50	1.0
Total	3.14	2.16	1.36	1.64
SELECT TENDER				
Private	2.90	1.70	1.50	0.9
Public	3.10	1.90	1.10	0.8
Total	2.99	1.76	1.28	0.82
TOTAL				
Private	3.10	1.44	1.40	1.55
Public	3.03	2.33	1.25	0.89
Total all	3.06	1.96	1.32	1.28

Cordell also calculated the average cost of open and select tenders in the non-housing sector as 1.6 per cent. However, when the cost of subcontract tenders is included, the percentage rises to 3.5 per cent, an increase of 118 per cent. This percentage increase could be added to the percentages in Table 9.3 as a rough approximation of the total cost of bidding.

It is now possible to make a number of interesting observations:

- The cost of tendering is considerable.
- The cost of open tendering is consistently higher than of select tendering.
- The cost of tendering on private contracts is generally higher than on public contracts.
- The cost of tendering (as a percentage of the tender price) tends to diminish as the value of the project increases.
- The number of bidders should be restricted to minimise the cost of tendering. Kirkpatrick (1963) recommends the maximum number not to exceed seven.

It has been demonstrated that cost of tendering is considerable, particularly under the open tender method. A large number of bidders, while providing a wide bidding range, increases the cost of tendering and contributes to the wasteful use of resources.

Who pays for tendering? Bidders pay initially, but sooner or later the cost of tendering is passed to principals and to the industry at large, either directly or indirectly. A winning bidder will include the cost of tendering in the tender, while unsuccessful bidders will attempt to recover costs incurred on past tendering from future contracts. However, the longer it takes for a bidder to secure a contract, the greater will be the amount of incurred tendering costs that must be charged against future contracts, unless these costs can be written off. A bidder who is continuously unsuccessful faces a dilemma: if the bidder continues to tender at the same level of mark-up, the tenders will become increasingly uncompetitive as the bidder's overhead costs will keep on increasing. On the other hand, if the bidder lowers the profit margin to offset rising overhead costs, the bidder may become more competitive, but at the expense of not being able to meet financial obligations. If a bidder is forced into bankruptcy, debts including unrecovered tendering costs will be borne by creditors. Thus the time, effort and cost of unsuccessful tendering constitute a wasteful use of resources.

It has been suggested that by limiting the number of bidders, the cost of tendering could be reduced. Tendering costs will, however, continue to be incurred and for as long as contractors remain in business, such costs will in the end be borne by principals, who

will not know the full extent of such costs. The uncertainty associated with the level of tendering costs suggests that a case can be made for principals to attempt to eliminate uncertainty by not only limiting the number of bidders but also by determining the cost of tendering up front and then paying a fee to bidders for the preparation of tenders. In such circumstances, it would be reasonable to assume that the quality of tenders would improve. Paying for the cost of tendering up front would also bring to an end an unethical practice of calling for tenders to ascertain a market price without the intention of actually awarding a contract. This practice is not only unethical but it may also be in breach of s. 52 of the Trade Practices Act. Tenderers may have a right to recover damages.

SUBCONTRACTING PRACTICE

10.1

INTRODUCTION

Subcontracting is a process of subletting trade or work packages to ordinary contractors or to specialist contractors, commonly referred to as subcontractors. A subcontract is a contractual agreement enforceable by law formed between a subcontractor and a general contractor. Sweet (1977: 85) describes the subcontracting process as:

the method of construction organisation under which the prime contractor is allowed to, and frequently performs, some or even much of its contract obligations through other contracting entities. These latter entities are 'first-tier subcontractors'. Likewise, the process in a large construction project can involve first-tier subcontractors performing their contract obligations through other contracting entities called 'second-tier subcontractors' or sub-subcontractors.

Subcontracting forms an integral part of the building process in Australia. It is seen as a process that offers better utilisation of resources, a greater degree of specialisation of trades and therefore better efficiency and economy of the building process. The effectiveness of subcontracting is directly influenced by the contractual relationship between general contractors and subcontractors. Such relationships should be equitable to both contractual parties with regard to rights and responsibilities.

There has been a growing tendency for contractors in the construction industries of most Western countries to subcontract most of the work that they themselves have contracted to carry out. With the advent of managed methods of project delivery in

recent years, the level of subcontracting has peaked, resulting in up to 100 per cent of construction work being subcontracted.

It is generally believed that subcontracting improves the productivity of construction facilities by virtue of specialisation. Productivity is a measure of efficiency of the production process in terms of resources. It implies that as resources are more efficiently utilised, greater economies can be achieved. Consequently, construction projects should be relatively cheaper and, as a result of a high level of specialisation of subcontractors, of better quality.

Although a lack of published data makes it difficult to verify, the notion that the subcontracting process reduces the cost of a construction facility is plausible and, under ideal conditions, quite realistic. Ideal conditions, however, rarely prevail in the construction industry. The fact of the matter is that construction is a high-risk industry subjected to economic fluctuations and characterised by a high level of competition, the lack of skilled labour, and unsavoury industrial relations. Under these conditions the assumption that subcontracting improves productivity may not hold.

Subcontractors fall into two types: those who carry out traditional building trades, for example bricklayers, plasterers or concreters (referred to as 'ordinary subcontractors'), and specialist subcontractors who carry out specialist tasks such as mechanical, hydraulic, electrical and landscaping services. Sometimes specialist subcontractors are nominated by the principal and are known as 'nominated subcontractors'. Apart from being nominated by the principal, nominated subcontractors enjoy a greater degree of protection of payment under the terms of the main construction contract than do ordinary subcontractors. Both types of subcontractors have direct contracts with the general contractor, who assumes the overall responsibility for the work of subcontractors.

10.2

HISTORY OF SUBCONTRACTING

Subcontracting has existed since time immemorial, but it became an increasingly popular practice in the Australian construction industry in the 1960s and over the years has established itself as an integral part of the industry's production process. Subcontracting is particularly popular in the building sector of the industry, where subcontractors perform around 90 per cent of all construction work (Mansfield 1988). The advent of managed delivery methods has provided the opportunity for subcontractors to either expand

their activities across a range of related trades or form alliances with other subcontractors in order to bid for competitive 'work packages'.

Why has subcontracting become so popular? The reasons behind the development of subcontracting are numerous and are attributed not only to the needs of the construction industry but also to changes in the economic and social climates of Western countries.

Throughout the 1950s and early 1960s the construction industry largely operated on full documentation. The projects were procured using the traditional method of delivery, with main contracts awarded through competitive tendering. Those were the years of the economic prosperity, little inflation, low and stable interest rates, and industrial peace. The architect was then the undisputed leader of the project team. The principal would seek the architect's professional advice on the feasibility, design, contractual and construction aspects of the project. The architect would normally design and document the project, select the contractor through a tender process, and administer the contract as the principal's agent.

The contractor was regarded as a master builder in the true sense, since the contractor performed most work with his own directly employed tradesmen and apprentices. Only highly specialised areas of work, such as mechanical and electrical, were performed by subcontractors.

Most Western economies were at their prime in the 1950s and early 1960s, enjoying fast economic growth, low inflation and almost full employment. The construction industry too enjoyed prosperity and stability. Since the late 1960s, however, the world economies began to experience periodic economic downturns, spiralling inflation, high interest rates and growing unemployment. Since the construction industry is highly sensitive to fluctuations in the economic climate (it is said to be a barometer of the national economy), the emergence of adverse economic factors were instrumental in changing established practices and processes of the construction industry. One of a number of significant changes was a shift towards subcontracting. Subcontracting emerged principally because:

- contractors' capacity as employers of tradespeople was eroded by periodic economic downturns, high inflation, high interest rates and the growing industrial disputation
- projects became more complex and required the services of highly specialised workers
- subcontracting provided an opportunity to individuals to set up and run their own business.

Contractors found the periods of economic downturn difficult to manage with a large directly employed workforce, particularly when inflation, interest rates and the level of industrial dispute were high. Subcontracting provided contractors with the opportunity to significantly reduce overhead costs by downsizing the labour force.

Construction projects, particularly buildings, have since the 1960s become more complex in their design, construction and procurement. This complexity was reflected in the unique shape and extra height of projects, the use of new materials, plant and construction technologies, increased sophistication and volume of building services, the greater reliance on IT technology, the adoption of new methods of project delivery and the shift towards project management. All this necessitated mobilisation of specialists in areas of design, construction and project management. The emergence of subcontracting provided the means of achieving such specialisation of construction.

There is one other reason for this shift. Subcontracting would never have gained popularity if it had not been seen by tradespersons as providing an opportunity to set up and run their own specialised businesses. This also offered tax benefits.

Today, the diversity of subcontractors is considerable, ranging from the one-person operation to large, highly sophisticated corporations. Since general contractors prefer to operate in a more risk-immune environment of construction and project management, subcontracting firms have been given an opportunity to pursue 'packaged contracts', which may go well beyond the boundaries of their traditional trade expertise.

10.3

SUBCONTRACTING IN THE US, UK AND AUSTRALIAN CONSTRUCTION INDUSTRIES

Subcontracting on a major scale developed in postwar years in the US construction industry and quickly became an established practice. It is popular and is an integral part of the construction industry.

American subcontractors have enjoyed a strong support from various subcontract associations, which have worked tirelessly towards safeguarding contractual interests of their members. They have been particularly instrumental in resisting unethical bidding practices used by some general contractors and the use of onerous subcontract conditions.

One of the defences against unethical bidding practices by contractors that was successfully promoted by subcontractors' associations was the use of separate contracts for some sections of the work performed by subcontractors. For example, trades such as mechanical, electrical and hydraulics were treated as separate contracts if their respective contract values exceeded 5 per cent of the total contract value. Separate specifications and contract documents are drawn up, and separate bids sought by the awarding authority (Anon 1980).

The separate contract system was designed to bring about more normal and stable competitive conditions in the construction industry. The principal enters into direct contracts with such specialised subcontractors on competitive tender price without the contractor's involvement. Although the general contractor assumes the responsibility for the execution of these specialised subcontracts, the subcontractors are paid directly by the principal (NECA 1986).

In addition to controlling the choice of major separate contractors, the principal appears to benefit by lower costs. It is claimed that the separate contract method has resulted in savings of between 6 and 20 per cent (ASC 1982). These savings are not just the result of eliminating the general contractor's markup from the bid prices of those subcontractors who become separate contractors. A bigger factor is that the principal gets the real benefit of best bid prices from such subcontractors who otherwise would have tendered a high price to general contractors in anticipation of future 'bid negotiation'.

The development of subcontracting in the UK construction industry has followed a similar path. Because the UK industry, apart from developing new construction projects, is also concerned with restoration of the existing building stock, the degree of subcontracting across the building sector of the industry is not constant. Contractors operating in the restoration field rely more on maintaining their own workforce of experienced craftsmen in preference to subcontracting.

Since the 'de-unionisation' of the UK industry in the early 1980s under the Conservative Government, the number of small subcontracting firms has risen sharply. Chalk (1984) reported an increase in the number of one- to three-person subcontracting firms (labour-only subcontractors) by 33 per cent in one year alone. The rise in self-employment was not confined to one area but was widespread across the whole of the United Kingdom.

The Australian experience with subcontracting is very similar to that of the US construction industry. Subcontracting is

widespread, particularly in the building sector. Like their American counterparts, Australian subcontractors formed subcontracting associations, whose main task was to support and promote activities of subcontracting firms. However, these associations have not been able to present a united front in their attempt to safeguard the interests of subcontractors in Australia, particularly in eliminating unethical bidding and the contractual practices of general contractors (Uher 1990b).

10.4

RISKS IN SUBCONTRACTING IN AUSTRALIA

Subcontractors are exposed to a range of project-based risks and external risks, which are not unlike those faced by general contractors. Uher and Runeson (1984) identified the relationship with the general contractor as the most critical risk that subcontractors face. Economic conditions, the capacity to carry out the work, quantity of work on hand and tendering strategies are other important risks in subcontracting (Runeson 1987).

Subcontractors' risks arising from the relationship with the general contractor are mainly related to (Uher & Runeson 1985; Uher 1990c):

- subcontract conditions
- safety and industrial issues
- competence of the general contractor
- reputation of the general contractor for bid shopping
- previous experience with the general contractor.

Subcontractors either consciously or subconsciously make allowances for uncertain events in bid prices. This practice represents the most effective defensive measure and reflects subcontractors' awareness of the bidding process and their determination to protect profitability. Uher (1990c) measured the maximum level of risk allowances made by subcontractors in their bid prices to be 11.4 per cent.

10.5

SUBCONTRACT CONDITIONS

Subcontractors view the conditions of a subcontract as a source of the greatest risk, particularly those prepared by the general

contractor. The conditions of subcontract allocate risks, and define the rights and obligations of the parties under the subcontract.

Since conditions of subcontract are seen by subcontractors as the main source of risk, the knowledge, interpretation and administration of such conditions is the fundamental requirement of good contract management. Subcontractors make an effort to know subcontract conditions before submitting a bid price to the contractor (Uher 1990b).

Australian general contractors prefer to use mainly their own conditions of subcontract tailored to their specific needs (Uher 1988a). These in-house drafted conditions of subcontract often contain terms and conditions unfavourable to subcontractors (Peacocke 1978).

The basic problem with in-house drafted conditions of subcontract is that they rarely treat both contractual parties as being equal, with inequity borne mainly by subcontractors. Terms of payment, contractor's program, arbitration, withholding payment, retention, variations, delays, site facilities and acceptance of responsibility are a few typical areas where unfair or onerous conditions have been applied (Peacocke 1978). Experience shows that the subcontractors have an arduous task in negotiating fair conditions, and an even harder task in getting them applied.

Common sense suggests that conditions of subcontract should be framed in such a way that:

- 1 They are equitable to both parties, with neither in a preferred position with regard to the other. This is particularly important with regard to risk allocation.
- 2 The rights and obligations of the parties, and the work to be done, are clearly described.
- 3 In the event of non-performance of one or the other party, the injured party may claim adequate remedies.
- 4 A satisfactory procedure for settling of disputes forms an integral part of the conditions including an arbitration clause. (BIAC 1977)

Subcontractors view the presence of onerous conditions in a subcontract as a critical risk since it has an adverse impact on their profitability. Among the most 'risky' conditions are:

- terms of payment
- extension of time
- rise and fall
- liquidated damages
- delays and cost of delays. (Uher 1990c)

Subcontractors respond to the presence of onerous subcontract conditions by including an appropriate risk allowance in a bid price. The magnitude of the risk allowance was measured in the range from 6.6 per cent to 8.5 per cent (Uher 1990c).

10.5.1 Terms of payment

The 'terms of payment' condition exposes subcontractors to the greatest degree of risk. The exposure is most severe under the 'pay when paid' condition, which provides for a payment to the subcontractor only after the general contractor had secured payment from the principal. This condition is commonly inserted in most in-house prepared conditions of subcontract and it gives no guarantee as to when payment will be made. Most standard conditions of subcontract stipulate specific periods of time for payments to ordinary subcontractors and are arrived at by negotiation. In New South Wales, for construction contracts let after 25 March 2000, 'pay when paid' clauses are void and if the subcontract fails to stipulate a time for progress claims, they can be made at four-weekly intervals (*Building and Construction Industry Security of Payment Act 1999* [NSW]).

The tactic used by contractors to delay payments basically transfers responsibility for financing portions of a project to subcontractors, the party least equipped to carry financial risks (Ferrett 1985). In addition to having their payments delayed, discounts originally offered to general contractors as inducement for prompt payment are deducted whether or not the payment is made.

Risk to subcontractors is further increased through the general contractor's right to withhold, reduce or defer payment of any sums due, provided there are valid reasons for doing so. The general contractor is obliged to give written advice of the reason, but subcontractors often complain that this right is open to abuse (Humphrey 1985; Moss 1986).

10.5.2 Extension of time

Commonly, the subcontractor is entitled to claim extensions of time only in relation to delays to the date for practical completion of the main contract works. But the subcontractor's right to an extension of time in situations where the general contractor receives an extension is not guaranteed and indeed is often denied. Delays caused by the general contractor or other subcontractors do not necessarily form a legitimate ground for the granting of an extension to the subcontractor irrespective of whether or not the delay affects the critical path.

10.5.3 Rise and fall

Most in-house drafted subcontract conditions do not contain a 'rise and fall' clause. In excluding such a clause from the conditions, the general contractor transfers the risk for the escalation of labour and material costs caused by inflation to subcontractors.

The principal ultimately pays for the escalation of costs one way or the other. It is in the principal's interest to ensure that subcontractors are adequately protected under the terms of their subcontracts against escalation of labour and material costs.

When the principal excludes a 'rise and fall' clause from the main contract, the contractor would undoubtedly respond by deleting a similar clause from subcontracts. Both the general contractor and subcontractors would respond by making appropriate risk allowances in their bid prices. In this situation, the principal loses control over the risk of escalation costs. The principal will pay either too much or too little for such a risk depending on the level of the risk allowances. Either scenario is undesirable since it increases the principal's risk of cost and time overruns.

It is generally recognised that risks should be assigned and borne by those parties who are able to control them. Clearly, neither the general contractor nor subcontractors are able to control the cost escalation risk on long-term projects, though they may be able to control it on shorter-term projects, say up to six to 12 months in duration within a stable economic climate. The risk of 'rise and fall' could best be handled by sharing it between the principal, general contractor and subcontractors, with the principal assuming the responsibility for the risk in the long term, and the general contractor and subcontractors in the short term.

10.5.4 Liquidated damages

A 'liquidated damages' clause appears in practically all subcontracts. Its purpose is to recompense the contractor for loss resulting from the subcontractor's failure to complete the work by the date for completion stated in the subcontract.

Although frequently applied in subcontracts, general contractors rarely enforce the 'liquidated damages' clause. This is because general contractors know that its imposition would likely result in costly and lengthy arbitration or litigation. Even if successful, the general contractor would have little chance of collecting any damages (Uher 1990c).

The insertion of a 'liquidated damages' clause in subcontracts appears to be intended purely as a threat without a conscious

intent to apply it. But the risk of possible liability under 'liquidated damages' is too great to be ignored by subcontractors. They generally respond by making an appropriate risk allowance for such a risk in their bid prices.

10.5.5 Delays and the cost of delays

It is common practice for a general contractor to delete clauses that impose any obligation to compensate the subcontractor for delays caused by the contractor's actions. At the same time, other clauses, which operate in the reverse direction, are left in. It was pointed out by Peacocke (1978: 69) that 'it is in the general interests of the building industry to have such clauses working both ways, as clearly it must be as great an inducement to the general contractor to complete his work on time as it is to the subcontractor, and the average situation will reflect a saving in money all round'.

Uher's (1990c) survey identified industrial matters (including safety), competency of general contractors, inclement weather and variations as the main causes of delays faced by subcontractors. The degree of uncertainty about whether claims for such delays would be accepted is reflected in the amount of a risk allowance made by subcontractors for these risks.

Ordinary subcontractors generally carry the full brunt of onerous subcontract conditions. Specialist subcontractors such as mechanical, electrical, plumbing and fire protection frequently avoid or minimise the impact of onerous conditions by becoming 'nominated subcontractors'. Nominated subcontractors, by virtue of their nomination by the principal or the principal's agent, are in a stronger position to negotiate fair subcontract conditions. It is argued by some that under nomination the principal receives inflated subcontract prices. This may be true, but no quantitative data is available to support the argument.

10.6

SUBCONTRACTING AND THE PRINCIPAL

Construction principals support subcontracting in the belief that it leads to a higher level of specialisation of trades, better efficiency and higher productivity, and consequently a better return on the invested funds. With increased efficiency, they expect projects to be completed within the scheduled time and the cost budget. Principals also expect to benefit from competitive

subcontract bid prices, which improve competitiveness of general contractors' tenders, which in turn lower the total project cost (Viljoen 1981). However, whether or not the principal is able to realise a lower project cost is not clear. Let's examine this issue in more detail.

Under the traditional method of project delivery, the principal prefers not to be involved in the project delivery. Instead, the principal engages a design consultant to design and document the project, and a contractor to build it. The principal also appoints a superintendent (commonly the design consultant) to administer the contract during the construction stage. The principal encourages subcontracting by the insertion of subletting clauses into the main contract. The principal is unconcerned about subcontractors since the responsibility for subcontractors lies with the contractor. What the principal may not realise is that subcontracting, by virtue of a multitude of separate contractual agreements, could increase the principal's risk.

While subcontracting certainly makes the use of resources more efficient, it also increases the complexity of the co-ordination and contract administration processes. Considering the large number of subcontractors typically engaged on a construction project, some co-ordination and contractual problems are bound to occur. Speedy resolution of such problems is vital if the cost budget and the time schedule are to be met. This is not always possible and delays may occur. The principal would expect the cost of delays to be borne by the general contractor and the subcontractors, but there is limited capacity for these people to pay the cost of delays. The risk to the principal is that the contractor may, in such a situation, attempt to pass the incurred delays and costs back to the principal through 'claims'. Full recovery of the cost of delays could cause financial difficulties for the general contractor and some subcontractors, and could even lead to bankruptcies. Nobody would gain under these circumstances, least of all the principal. The quality of work would suffer, completion of the project would be delayed, and the final cost would increase. Clearly, the existence of many subcontract agreements increases the principal's financial risk. The amount of risk to which the principal may be exposed very much depends on the general contractor's ability to manage and co-ordinate the project, and to absorb delays and extra costs arising from the deficiencies of subcontractors.

The common perception by principals that the risks are static throughout the duration of the project is invalid. The discussion

above shows that the problems arising from the relationship between general contractor and subcontractor may increase the principal's risk. The magnitude of the risk is a function of the principal's lack of involvement in the execution of the works.

Principals may be paying more for their projects than they need to as a result of the risks and uncertainties that subcontractors face when entering into subcontracts with general contractors, and during execution of the work (Blackhall & Goring 1984). Principals need to recognise the importance of subcontracting and the impact it has on the overall performance of construction projects. They also need to recognise that a fair and equitable approach to contracting and subcontracting will go a long way towards eliminating the fear and uncertainty to which subcontractors are exposed. They need to be convinced that it would lead to smoother, more economical and less arduous execution of projects.

Clearly, there is an argument for principals to rethink their approach to contracting and subcontracting. First, they should consider forming fair and equitable contracts with general contractors, and second they should play a more active role in the subcontracting process to ensure fairness and equity in subcontracting.

10.7

BID SHOPPING IN THE CONSTRUCTION INDUSTRY

General contractors favour subcontracting for three main reasons: first, it reduces their overheads as a result of a smaller, directly employed labour force; second, it improves on-site productivity (Blakey 1977; Rocher 1980); and third, it provides an opportunity to transfer some of the risks to subcontractors.

A contractual relationship between a general contractor and a subcontractor is generally formed in one of three ways: through tendering, which selects a successful bidder, through negotiation, or through a combination of both tendering and negotiation. Some general contractors prefer to use the same proven subcontractors from job to job and they negotiate subcontract prices without calling for tenders. However, most general contractors select subcontractors through the tendering and tendering/negotiation options (Uher 1988a).

General contractors are frequently faced with the dilemma of preparing a tender in a short time. As Pateman (1987) points out, subcontractors have even less time in view of the initial assessment and final consolidation periods required by the general contractor. This, combined with often ambiguous or incomplete tender documents, is probably the main reason for a wide disparity between the lowest and highest bids. Uher and Runeson (1985) have identified other factors that contribute to the variability of subcontractors' bids, among them being good past relationships with general contractors, prompt payment habits, the effort put into planning and supervision, a record of finishing projects on time, and a reputation for bid shopping. The aspect of bid shopping and its impact on subcontractors will now be discussed in detail.

10.7.1 What is bid shopping?

'Bid shopping' is the term used to denote practices employed by general contractors in their attempts to reduce subcontractors' bids. Bid shopping may take place during the tendering stage, when the general contractors may disclose the value of bids already received to other bidding subcontractors to induce them to lower their tender prices. It may also take place after the award of the main contract when the contractor enters into negotiation for a price with bidding subcontractors. Although not illegal, bid shopping is regarded as unethical. It contravenes codes of ethics or practice of most professional and industry associations, and government agencies such as the Associated General Contractors of America (AGC 1947), the Master Builders Association of Australia (MBA 1962), Standards Australia (AS 1994a) and the NSW Government (1996c). The MBA Code of Ethics states:

Fair and genuine competition is the fundamental service of our industry to which prospective principals are entitled. Competition cannot serve its legitimate purpose unless it operates under conditions [that] are fair to contractor and principal, alike.

No members shall make known the tender of any subcontractor or supplier before the closing of tenders. It is equally improper for a subcontractor or supplier to disclose his tender to another subcontractor or supplier prior to the closing of tenders ... No member shall attempt to solicit a contract after the closing date of tenders to the disadvantage of a lower tenderer, but shall at all times recognise the Association's policy that each tenderer is entitled to consideration in order from the lowest ... Members shall treat all quotations from suppliers of materials and subcontractors as strictly confidential and shall not reveal competitors' prices to each other or to any architect or engineer or

Government Department. No misleading statement shall be made in order to induce low quotations from suppliers or subcontractors. A member who invites a quotation from a supplier or subcontractor and incorporates such price in his tender shall, if the tender is accepted, award the work to the firm who supplied the quotation.

Bid shopping also contravenes the spirit of tendering and the codes of tendering operating in the construction industry, for example the Standards Australia Code of Tendering (AS 1994b) and the NSW Government Code of Tendering (NSW Government 1996a).

Subcontractors defend their bid prices against bid shopping by loading them with a risk allowance. Uher and Runeson (1984) measured the amount of such a risk allowance for shopping to be as high as 20 per cent of the bid price.

Despite the presence of codes of ethics and tendering, bid shopping is actively employed by general contractors. The prevailing view of contractors is that business should be able to operate unrestricted, that competition is the lifeblood of the free enterprise system and that subcontractors can always withhold their bids if they feel threatened by bid shopping. However, if subcontractors are prepared to participate in negotiation with the contractor and consequently to win a subcontract at a price at which they lose money, they have only themselves to blame. Advocates of bid shopping argue that subcontractors' bids are often not precise or responsive to the tender documents and require further negotiations to clarify the bid price. They further argue that 'first round' subcontract bid prices are generally too high and general contractors cannot depend on them. Their final argument is that bid shopping lowers the final tender price and offers a saving to the principal (O'Neal 1960; Schueller 1960).

Bid shopping before the award of the main contract appears to benefit the principal by reducing the main tender price. But when subcontractors load their bid prices in anticipation of bid shopping, the amount of reduction in the bid price through shopping may possibly be less than the amount of the risk allowance, in which case the principal is disadvantaged by bid shopping.

After the award of the main contract, further bid shopping may take place from which only the contractor will benefit. If the subcontractor is required, in order to secure a contract, to lower the bid price by an amount greater than the amount of the risk allowance for shopping, the subcontractor's profit margin would be reduced and the subcontractor's financial position undermined. This could lead to delays in the subcontractor's progress

and to poor-quality work. Clearly, this is to the detriment of the principal.

The principal's perception of the tendering system as the means of securing the most economical price for the job is undoubtedly frustrated by shopping practices. The principal's risk is also likely to increase.

The American experience of curtailing bid shopping practices in the construction industry is worth examination. Various methods have been tried since World War II with mixed results. The most notable methods such as bid depositories, listing of bids, filing of bids and the use of separate contracts will now be briefly discussed.

10.7.2 Bid depositories

'Bid depositories' may be established and operated by general contractors and trade associations as well as government agencies. Their aim is to eliminate bid shopping, both before and after the award of the main contract. A bid depository, though its details may vary with the group creating it, is a place where sub-contract bid prices are deposited by subcontractors, according to a set of rules, for registration and subsequent transmittal to specific general contractors according to a predetermined timetable.

The depository keeps the submitted bid prices confidential until the time of their opening. It opens and tabulates the quotations or simply transmits the submitted bid prices to general contractors and principals. The bid prices are then made known to all subcontractors participating in the depository, with the result that any subsequent bid shopping will be obvious.

Depositories have had a troublesome history. Their operations have been judged by some as unreasonable restraints of trade. Depositories operate under the jurisdiction of US federal anti-trust regulation known as the Sherman Act (O'Neal 1960; Schueller 1960; Lambert 1968). Many depositories and their participants have been prosecuted at various times for restraining free competition and trade, fixing prices for subcontractors, using a formula to obtain uniform prices, eliminating some low bids, conspiring to monopolise the market, imposing sanctions and fines on violators of the depository rules, and prohibiting general contractors from procuring sub-bids from other sources. As a result of numerous prosecutions and the historic test case *United States v. Bakersfield Associated Plumbing Contractors 1958* (Schueller 1960), the rules of depositories have been carefully redrafted to permit their lawful operation in the future while still safeguarding

against bid shopping. Their principal aim is to transmit properly submitted bid prices to tendering general contractors.

The use of bid depositories in the US construction industry has become less popular in the two decades, possibly due to the rules being too restrictive and the risks associated with infringing anti-trust laws too great. Nevertheless, their worth has been proven and they will continue to make a contribution towards minimising bid shopping.

10.7.3 Listing and filing of subcontract bid prices

Subcontractors in the USA have regularly pushed for federal construction legislation that would control bid shopping. To date, however, no federal legislation has been passed, mainly because of the opposition from general contractors. Some US state governments, on the other hand, have been more receptive to the plight of subcontractors. In Arkansas, California, Connecticut, Delaware, Florida, Massachusetts and South Carolina, laws for 'listing of subcontractors' or 'filing of subcontractors' have been enacted and used. Under 'listing', general contractors who tender for state contracts are required to list the subcontractors with whom they intend to contract. But the legislation generally protects only those subcontractors performing a substantial portion of the project, such as plumbing, heating, ventilating, mechanical and electrical subcontractors, whose subcontracts are valued in excess of between 0.5 per cent, in California, and 2.5 per cent, in South Carolina, of the contract value (ASA 1985).

Listing does not impede normal competition among subcontractors or interfere with negotiations before the award of the contract to the general contractor, and thus it has no effect on pre-award bid shopping. It also fails to protect smaller subcontractors.

'Filing', in operation in Massachusetts and Connecticut, combines the features of bid depositories and bid listing. Subcontractors are required to file sealed bid prices with the awarding authority. The authority then opens the bid prices publicly and forwards the list of bidders and their prices to the tendering contractors. General contractors select the bid prices from the list and detail them on their tender form.

10.7.4 Separate contracts

Some US states, namely New Jersey, Pennsylvania, Ohio, Illinois, New York, Wisconsin and Oregon, enforce the use of a separate contract system on state government projects. The system requires certain portions of the works to be specified, documented and let as separate contracts to specialty subcontractors, namely mechanical, electrical, plumbing and structural.

It is claimed that the separate contract system eliminates bid shopping entirely. There is evidence that it results in lower project costs. American research shows an average of 10.54 per cent reduction in costs on a sample of 567 projects constructed under the separate contract system (Anon 1982). Opponents of separate contract laws argue that the procedure fails to centralise responsibility. They contend that the single contract method does not place responsibility where it should be — on the general contractor.

10.7.5 Enforcement of codes of ethics

Codes of Ethics play an important part in defining standards of conduct in the construction industry. However, their existence is not a guarantee that their requirements will be adhered to. Considering that almost every professional and industry association in the construction industry has produced a code of ethics, the effectiveness of such codes in preventing bid shopping has been dismal. Sceptics say that codes of ethics are too idealistic to work in practice, and there are only sketchy examples of their effectiveness. In St Louis, where subcontractors and the local chapter of the American General Contractors adopted the 'Code of Ethical Bidding Practices', some level of success was achieved (Anon 1959). The Code requires subcontractors to submit bids to the general contractor within four hours of the general contractor's deadline. It also prohibits alteration of a bid once it has been submitted, and forbids a general contractor from quoting subcontract bids lower than those actually received.

A different approach was adopted by the NSW Government. The Code of Practice (NSW Government 1996c), among other things, sets down standards the Government expects individual organisations contracting with the Government and individual government agencies dealing with the construction industry firms to observe. The New South Wales Government is committed to the implementation of the Code and may invoke sanctions for non-compliance. 'Sanctions for non-compliance are based on the government's right as a principal to choose with whom it does business' (NSW Government 1996c: 24).

10.7.6 Protection of subcontractors in Australia

The concepts of bid depositories, listing and filing of subcontract bid prices, and separate contracts are not used in the Australian construction industry. However, Australian subcontractors are not defenceless against the bid-shopping practices of general contractors. Their main defence is to load subcontract bid prices in anticipation of bid shopping. It is interesting to note that the amount of loading or an allowance for shopping is not constant. Bid prices directed to contractors with the reputation for shopping contain a higher amount of the allowance (Uher & Runeson 1984).

Another practice commonly employed by subcontractors is to delay submission of bid prices until very close to the deadline for the submission of the contractor's tender to the principal. The contractor simply doesn't have the time to shop around for a better price.

In recent years and in particular through the efforts of the NSW Government, which is committed to the improvement of efficiency and productivity of the construction industry through a paradigm shift towards a win-win culture, codes of ethics and practice have gained more prominence. The commitment of the NSW Government to the implementation of the Code of Practice (NSW Government 1996c) and the Code of Tendering (NSW Government 1996a) is a positive step in the right direction. But codes will not do the job on their own. To ensure ethical conduct, construction principals need to take a greater interest in the administration of tendering at subcontract level.

By virtue of being near the end of the supply chain of the development process, subcontractors are often at the receiving end of unfair bidding practices and onerous contract conditions. Yet subcontractors represent the most important production resource. They are also the major employer of labour and provider of training to labour in the construction industry. It is essential that general contractors accept subcontractors as an equal contractual partner, and this should be reflected in conditions of subcontract that are fair and equitable.

RISK ALLOCATION: A NEW APPROACH

11.1

RISK ALLOCATION THEORY

The Abrahamson (1973) risk allocation theory has generally been accepted as forming a basis for allocation of risk in construction constructs. The theory was also expounded by the NPWC/NBCC (1990: 6) in its report *No Dispute* in the following terms:

The basic principles of allocating obligations and/or risks for all projects, adopted by the sub-committee, are those expounded by international construction lawyer Max Abrahamson. Those principles dictate that a party to a contract should bear a risk where:

- the risk is within the party's control
- the party can transfer the risk, for example through insurance, and it is economically beneficial to deal with the risk in this fashion
- the preponderant economic benefit of controlling the risk lies with the party in question
- to place the risk upon the party in question is in the interests of efficiency, including planning, incentive and innovation
- if the risk eventuates, the loss falls on that party in the first instance and it is not practicable, or there is no reason under the above principles to cause expense and uncertainty by attempting to transfer the loss to another.

The definition of 'risk' adopted in that report is 'hazard, exposure to mischance, or chance of bad consequences'. The report includes a 'risk/obligation model'. Examples given of 'risk/obligation' in construction contracts include:

- land ownership
- adequacy of tender time
- consultants' fees
- budget review
- latent conditions
- contractor negligence or breach
- owner negligence or breach
- late payment.

It is difficult to see how some of these can be called 'risks'. For example, land ownership is not in itself a risk, although owning land may give rise to risk of liability, for example occupiers' liability or liability for land tax. It is apparent from the NPWC/NBCC report that identification of risks is a major problem. The recommended alternative is to identify possible events rather than risks.

The linking together of obligations and risks creates further ambiguity. For example, to say that the risk of 'budget review' must be borne by one party is not the same as saying that the obligation of 'budget review' must be borne by that party.

Some obvious risks not included in the table of risks in the NPWC/NBCC report are:

- damage to the works by
 - accident
 - natural event
 - vandalism
- interim injunctions which are
 - justified
 - unjustified
- inflation
- failure of insurer to cover loss.

The report refers to 'basic principles of allocating obligations and/or risks' and advocates that 'those obligations and risks that are within the control of the principal should be borne by the principal, and those obligations and risks that are within the control of the contractor should be borne by the contractor'.

11.2

ANALYSING THE THEORY

Let us take the last proposition and apply it to latent site conditions. The theory as propounded in the report is that it is possible

to objectively determine the 'most appropriate allocation of risks and obligations'.

The finding of a latent site condition does not give rise to one single risk. Some of the risks are that:

- 1 the contract will be frustrated
- 2 a variation to the works as specified (the permanent works) will be necessary
- 3 a variation to the contractor's proposed method of working (the temporary works) will be necessary
- 4 no variation is necessary but the work will take longer to perform.

There are numerous other risks that can flow from the finding of a latent site condition, for example danger to workers, strikes, risks of redesign, etc. If the 'risk' of a latent site condition is to be allocated to the principal or to the contractor, what is involved? Let us examine how two standard forms of general conditions of contract deal with the problem.

NPWC3 general conditions of contract (these general conditions are mainly used in the public sector of the Australian construction industry) do not have a latent condition clause. Therefore the common law would apply. This would mean that in the event of 1 frustration, in those jurisdictions that have a Frustrated Contracts Act, the loss would be shared. In those jurisdictions that do not have such legislation, the contractor would not be entitled to any compensation under the contract, although a claim to restitution may exist.

In the event of 2 (variation to the permanent works), the additional cost would have to be borne by the principal. The costs associated with 3 and 4 would have to be borne by the contractor. It can therefore be said that in the absence of a latent condition clause in a contract, there is already a sharing of risk. Under NPWC3 it cannot be said that risk of a latent site condition has been allocated to the contractor, nor can it be said that the risk has been allocated to the principal.

In AS2124-1986 general conditions of contract cl. 12, as in the ICE Conditions 5th edition cl. 12 and the FIDIC Conditions 4th edition cl. 12, there is specific provision for reimbursement of the extra costs under 2, 3) and 4. Each of AS2124, ICE and FIDIC also has another condition expressly covering 1. (frustration). Under AS2124, so far as concerns risks 1 to 4, it would be said that the principal bears the risk of a latent site condition. However, the contractor still bears some risk. In particular, cl. 40.2(f) of AS2124 excludes profit and loss of profit in respect of delay or disruption.

There is a sharing of risk but it is a different sharing from that under NPWC3.

While the possible existence of a latent condition may be described as a 'risk', there is no way of simply allocating the risk to one party or the other. To speak of allocating risk is like speaking of allocating danger or uncertainty. What should be done is to identify the possible consequences of the occurrence of the event, which is the risk, and to identify the effect, if any, of the event on the obligations of the parties.

The 'Abrahamson risk allocation theory' is premised on the assumption that a 'preponderant economic benefit' can be determined in each instance. It is also premised on the assumption that it is legitimate to introduce into contract law a concept of what is equitable. Construction contracts cannot be treated in isolation from contracts generally and there is no point in trying to introduce into construction contracts theories that have not gained acceptance in contract law generally.

11.3

AN ALTERNATIVE APPROACH

Let's start from the premise that a contractor agrees to construct a facility to a certain specification for a fixed price and within a fixed time.

There are numerous events which, should they occur, will under the common law relieve the contractor from some or all of the contractual obligations. These events include:

- breach of contract by the principal
- latent conditions which involve variations to the permanent works
- directions by the principal or the superintendent other than directions to merely do what the contractor was already bound to do
- events which cause the contract to be frustrated but do not prevent work continuing.

In the absence of agreement to the contrary, the following events usually do not entitle the contractor to any relief:

- weather conditions
- industrial disputes
- shortage of labour or materials
- inflation
- latent conditions that do not cause frustration or a variation to the permanent works.

It is common in general conditions to provide some relief for the contractor in respect of some of these events. The relief provided usually falls into one or more of three categories, namely:

- extension of time
- reimbursement of extra costs
- off-site overheads and profit.

It would be possible to put in contracts a table of possible events and to identify in the table whether the contractor is entitled to any relief in respect of the event and if so, the extent of the relief. An example of a table is given below (Table 11.1). It is based on the AS2124-1986 Conditions of Contract.

The table has several advantages over the traditional method of drafting. It directs the attention of the person drafting the contract to the need to address events that may be peculiar to that contract. Possible events can be readily added to the end of the table. The use of the table requires consideration to be given to the extent of relief to which the contractor may be entitled. General conditions frequently refer to an extension of time or to extra costs without consideration to the three types of relief. It is then often ambiguous as to whether the contractor's entitlement is only to an extension of time or only to extra costs or whether the contractor is entitled to other relief as well.

The table should simplify drafting, reduce the scope for ambiguity, and allow the parties to see at a glance the entitlement or absence thereof when an event occurs. The use of this format for all standard forms would greatly assist in comparing the forms.

TABLE 11.1

RISK ALLOCATION TABLE

COLUMN A	COLUMN 1	COLUMN 2	COLUMN 3
EVENT	TIME	COST	PROFIT
As a consequence of the discovery of a discrepancy in the documents forming part of the contract, the superintendent gives the contractor a direction as to the interpretation to be followed, which direction causes the contractor to incur more cost than the contractor could reasonably have anticipated at the time of tendering (cl. 8.1).	E	E	E
A latent condition causes the contractor to:			
(a) carry out additional work	E	E	E
(b) use additional construction plant	E	E	E
(c) incur extra cost which the contractor could not reasonably have anticipated at the time of tendering (cl. 12).	E	E	X
The contractor is delayed in reaching practical completion by:			
(a) events beyond the reasonable control of the contractor; other events in (b) below	E	X	X
(b) delays caused by the principal (cl. 35.5).	E	E	E
The superintendent fails to grant an extension of time when the contractor is entitled to an extension (cl. 35.5).	X	E	X
Variations directed by the superintendent (under cl. 40.1).	E	E	E

Table 11.1 should be interpreted as follows. Upon the occurrence of an event listed in column A:

In Column 1

- X indicates that if the event causes delay to the contractor, the contractor has no entitlement to an extension of time for practical completion.
- E indicates that if the event causes delay to the contractor in achieving practical completion, the contractor may apply for an extension of time for practical completion.

In Column 2

- X indicates that if the event causes the contractor to incur additional costs in performing the contract, the contractor will be not entitled to recover from the principal any of the additional costs.
- E indicates that if the event causes the contractor to incur extra costs in carrying out the work under the contract, the contractor is entitled to claim reimbursement of the extra costs, but unless there is an 'E' in column 3, the contractor will only be entitled to reimbursement of extra costs and will not be entitled to off-site overheads and profit or to any loss of income that the event may cause.

In Column 3

- X indicates that if the contractor has an entitlement to the extra costs that the event causes the contractor to incur, the contractor will nevertheless not be entitled to any amount for off-site overheads or profit in respect of the work to which the additional costs relate and will not be entitled to any loss of income which the event may cause the contractor.
- E indicates that the contractor is entitled to claim a reasonable amount for overheads and profit in respect of the extra costs to which the contractor is entitled to be reimbursed and, if the event causes the contractor to incur loss of income, the contractor is entitled to claim the loss, which could not reasonably have been avoided.

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PART 2

CONSTRUCTION
CONTRACT
ADMINISTRATION

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ANALYSIS OF GENERAL CONDITIONS OF CONTRACT

12.1

INTRODUCTION

Most construction contracts include 'general conditions of contract'. These are usually a set of written conditions covering matters common to construction contracts such as progress payments, construction program, variations, etc. Various organisations have published their own set of standard general conditions of contract for various types of contract. Sometimes they are published with a view to earning profits from the sale of copies and licensing of their use. More often they are published by an organisation with a view to protecting the interests of its members by assigning risks to clients of members rather than to members, or by a principal with a view to assigning risks to contractors. Different sets of general conditions of contract vary greatly in fairness, quality of drafting and matters covered.

Sometimes the general conditions are called a contract, although they are only part of the contract. For example, the Property Council of Australia calls its standard general conditions the 'Project Contract' and gives it the title PC-1 1998. The first number stands for the edition. The year is the year of first publication. NPWC3-1981 is the third (and last) edition of the general conditions, commonly called the 'National Public Works Contract', published by the National Public Works Conference in 1981 and still

used by some government construction authorities. CIC-1 is the 'Construction Industry Contract' published in 1997 by the Royal Australian Institute of Architects. Standards Australia has published a number of sets of general conditions. They are preceded by the letters AS. The best known is AS2124-1986, a set of general conditions of contract for a lump sum or schedule of rates contract for either building or engineering works. The NSW Department of Public Works and Services uses AS2124-1986 but also uses its own form of construction contract, C21, 2nd edition. This can be found at www.c21.dpws.nsw.gov.au.

A standard set of general conditions serves several purposes. First, it obviates the need to draft conditions covering routine matters and allows the person preparing the contract to concentrate on conditions specific to the proposed project. Use of standard conditions usually expedites the tender invitation process. Second, if the standard conditions selected are familiar to contractors who may be tendering for the project, the contractors will not need to spend time examining the conditions. If the standard conditions have a reputation for allocating risk fairly, tenderers may tender a lower price than they would if the conditions appear to unfairly allocate risks to the contractor. Third, if the standard conditions have been in common use in the construction industry for many years, it is less likely that disputes will arise over interpretation.

The term 'contract of adhesion' refers to a standard printed contract or set of general conditions prepared or adopted by one party which the other party must accept if the other party wants to contract. In the construction industry, contracts of adhesion are the rule rather than the exception. However, there is a rule of interpretation that works against the interests of the party that imposes the contract of adhesion. This is the 'contra proferentem rule'. It means that ambiguities in the contract of adhesion will be construed contrary to the interests of the person who imposed the contract of adhesion.

The longest lasting of the widely used sets of general conditions in Australia is AS2124-1986. It was drafted by a committee with representatives from Commonwealth and State Government construction authorities, developers, owners, building and engineering contractors, subcontractors, architects, engineers and others. AS2124-1986 took five years to produce. A draft was published for public comment and public comments from all over Australia were considered before the final document was published. AS2124-1986 gained a reputation for having the 'fairest' risk allocation between the principal and the contractor. In 1992, however, Standards Australia published a revised edition

of AS2124-1992 which swung the balance of risk allocation in favour of the contractor. That spelt the demise of the pre-eminence of AS2124 but it is still probably the most often used set of general conditions for major construction work. AS2124-1986 has many similarities to the ICE Conditions used in the UK and the FIDIC Conditions used internationally, but it also introduced some unique conditions and concepts. Concepts and provisions copied from AS2124-1986 are to be found in most construction contracts now used on major building and engineering projects in Australia. How, with some minor changes, AS2124-1986 can be used as a design and construct contract is explained by Davenport (1991a). AS4300-1995 is AS2124-1992 with minor changes intended to make it suitable for D&C contracts.

AS2124-1986 is drawn on for examples in this chapter. It will be found in many libraries. It can be purchased from Standards Australia and is reproduced in *Flowchart Analysis AS2124-1986*, 2nd edition (Davenport 1998). That book contains a detailed commentary on AS2124-1986 and changes made in AS2124-1992. No other Australian standard form of construction contract has such a comprehensive guide to its use and interpretation. Where, in this chapter, a clause number is referred to without reference to a specific contract, it is a reference to that clause number in AS2124-1986. Like all major contracts, the AS2124-1986 contract addresses three important issues:

- 1 It delineates the fundamental obligations of the parties. The contractor is required to build and the principal to pay for the work done.
- 2 The conditions in the document provide the machinery for the management (administration) of the transaction.
- 3 The contract allocates the commercial risks inherent in the transaction. This is the most significant of all functions of general conditions and the one that creates the greatest difficulty.

The contract framework includes clauses covering:

- the agreement
 - scope of works
 - what is to be done
 - who is involved
 - times
- documents
 - financial arrangements
 - payments
 - liquidated damages
 - insurance

- management arrangement
 - responsibilities
 - relationships
 - subcontracts
- legal arrangement
 - contract conditions
 - legal courses of action
- administration
 - procedures

The parties should understand contract conditions and the implications of agreeing to particular conditions and changing standard conditions. However, there are problems in understanding general conditions. The first is that they consist of words, and words do not always convey the same meaning to different people. In the event of a dispute which cannot otherwise be resolved, judges will interpret the words.

To understand general conditions, one has to attempt to predict what interpretation a judge would put on the words. For example, in *Alexander v. Housing Commission of Victoria* [1985] 4 ACLR 85, a judge had to interpret a condition: 'Any delay in giving possession shall not be deemed a breach of contract or entitle the contractor to compensation'.

The judge held that the words did not prevent the contractor from recovering compensation where the principal refused to give possession of half the site for a period of ten weeks. From a study of the way judges interpret contract conditions, it was quite predictable that the judge would find that the condition did not protect the principal. Almost exactly the same clause still appears in many contracts (e.g. cl. 27.1 of NPWC3). Parties to a contract rarely have the time or expertise to study how judges have interpreted particular contract conditions. That is why they so often have to get expert legal advice to interpret conditions.

The second problem in understanding general conditions is that they must be interpreted in the light of statute law and common law. For example, a condition that imposes a penalty will be void because the common law does not allow contracts to impose penalties. Chapter 15 considers laws that restrict a builder's freedom to contract to carry out domestic building work and terms that are, by statute, made part of a contract for domestic building work.

In *Gilbert Ash (Northern) Ltd v. Modern Engineering (Bristol)* [1973] 1 BLR 73, the court had to interpret a condition: 'If the sub-contractor

fails to comply with any of the conditions of this sub-contract, the contractor reserves the right to suspend or withhold payment of any monies due or becoming due to the sub-contractor'. The court found that the condition was void as being a penalty.

The Commonwealth *Trade Practices Act 1974* and the Fair Trading Acts of each State can also provide a remedy for a party to a contract despite what the contract conditions say. For example, s. 52(1) of the Trade Practices Act provides: 'A corporation shall not, in trade or commerce, engage in conduct that is misleading or deceptive or is likely to mislead or deceive'. The Act permits the person misled or deceived to recover damages and the Act renders void any contract condition that would exclude or limit the right to damages.

12.2

RISK ALLOCATION

The term 'risk allocation' is commonly used to describe obligations. It is a fundamental function of contract conditions to allocate obligations to each of the contracting parties. There is a theory that obligations should be allocated on the basis of who is in the best position to control risks and for whom it is economically feasible to carry such risks. A discussion of this theory of efficient risk allocation will be found in NPWC/NBCC (1990). It is sometimes argued that the obligation allocation exercise should be carried out in the most equitable manner. The NPWC/NBCC (1990) advocates that 'those obligations and risks that are within the control of the principal should be borne by the principal, and those obligations and risks that are within the control of the contractor should be borne by the contractor'.

Of all standard forms of construction contract in general use in Australia, AS2124-1986 appears to address the issue of risk allocation in the most equitable manner.

12.3

FLOW OF INFORMATION

12.3.1 Site meetings

Site meetings are not mentioned in AS2124. Frequently the specification will refer to site meetings and require the contractor to attend them. The main function of site meetings is to discuss past

performance, identify the main problem areas and reasons for problems, agree on a new short-range schedule, and co-ordinate the activities of all the parties including subcontractors. The need for the establishment of effective means of communication was discussed in Chapter 2.

It is usual to keep minutes of site meetings, but often the parties fail to consider the contractual significance or otherwise of matters 'agreed' at site meetings. For example, if the superintendent attends a site meeting at which it is 'agreed' that something will be done, is there automatically a 'direction' by the superintendent to do that thing or an approval by the superintendent of the actions that were 'agreed'? To avoid the ambiguity, the superintendent should be careful to warn the contractor that nothing said or not said by the superintendent is to be taken as any direction or approval of anything unless the superintendent gives a direction in writing.

Similarly, there is the problem of the capacity of persons at the site meeting to bind the principal or the contractor. Unless care is taken, a site meeting may result in material changes to the contractual rights of the parties. While the changes may have been intended by one party, they may be inadvertently accepted by the other.

12.3.2 Site directions (instructions)

Directions are initiated by the superintendent or are in response to questions from the contractor. The procedures to be followed and the format are set out in AS2124 (cl. 23 and cl. 25). The contract states that the direction may be given orally but the superintendent is to confirm it in writing as soon as practicable. However, if the contractor in writing requests the superintendent to confirm an oral instruction, the contractor is not obliged to comply until the direction is verified in writing. Some contracts provide that a direction can only be given in writing. That creates problems. For example, if the superintendent orally gives the contractor a direction to do extra work and the contractor complies with it, is the work outside the contract? If it is, then the contractor can probably claim a quantum meruit for the work. A provision that directions can only be given orally is quite different from a provision that if the contractor complies with an oral direction, the contractor will not be entitled to be paid for work done in compliance.

Clause 23 defines 'direction' to include approval, explanation, request, permission and other acts that would not normally be

thought of as directions. Clauses 7 and 25 deal with service of directions. Note that directions can only be given to the contractor's site representative when they relate to work on the site. Otherwise they should be given to the contractor. Clause 23 does not empower the superintendent to give a direction. The power to give any particular direction must be found elsewhere in the general conditions or the other contract documents. For example, cl. 40.1 empowers the superintendent to order variations to the work.

12.3.3 Contract documents

The drawings and the specification provide the most important communication link between the designer and the contractor. On signing the contract, the contractor will be issued with multiple sets of documents as per cl. 8.3 (five sets of the drawings, specification, bill of quantities, if any, and other written information required by the contract to be supplied to the contractor).

All documents should be checked by the contractor for any discrepancies, errors or omissions and any that are found should be reported to the superintendent in writing. If an ambiguity or discrepancy is found, the superintendent must direct the contractor as to the interpretation to be followed in carrying out the work (cl. 8.1).

The superintendent is not the arbitrator on the meaning of the ambiguity or discrepancy. The superintendent does not have to form any opinion on the meaning. Either there is or there is not an ambiguity or discrepancy. If there is, then the superintendent must direct the contractor as to what interpretation is to be followed in carrying out the work. The superintendent is bound to adopt the interpretation that the principal requires, and there is no 'duty of fairness' involved in giving the direction. The contractor can claim for extra costs under cl. 8.1. Errors, omissions and ambiguities will commonly lead to variations (cl. 40.2).

In AS2124, the order of precedence of documents is not given. The documents comprising the contract are to be taken as mutually explanatory of one another. There are two diametrically opposed schools of thought on having an order of precedence stated in a contract. For example, the opposite view prevailed in the drafting of JCC-C 1993 (see cl. 2.02.01 of JCC-C), CIC-1 (see cl. B2), PC-1 1998 (see cl. 6.10) and the FIDIC Conditions (see cl. 5.2 of FIDIC, 4th edition.).

The absence of an agreed order of precedence does not mean that in the event of ambiguity, there is no order of precedence.

The common law has its own order of precedence. Generally, the document made later in time will prevail over an earlier document and a document specifically drafted for the contract will prevail over a more general provision.

An increasingly common claim being made by contractors is a claim in tort that the contract documents were negligently prepared and contained errors, which resulted in the contractor incurring more expense than anticipated. In the alternative, a claim (of misleading and deceptive conduct) is usually made under s. 52 of the *Trade Practices Act 1974* (Cwlth) or s. 42 of the *Fair Trading Act 1987* (NSW) or the equivalent section of the Fair Trading Act of another State. Because the claim is made in tort or for breach of statute, not under a contract, contractors and subcontractors sometimes make the claim on design consultants and subcontractors sometimes make the claim on the principal.

A Canadian Supreme Court decision which has created considerable interest and criticism (Duncan Wallace 1995) is *Edgeworth Construction Ltd v. F. Lea & Associates* [1993] 3 SCR 206. The case involved a claim in tort by a contractor against the consulting engineers who prepared the tender invitation documentation for a government road-building authority. The documentation misled the contractor. The authority avoided liability because it had a clause in the contract that exempted it from liability. But the court held that the consulting engineers owed a duty of care to tenderers when preparing the documentation. They were providing tenderers with information and they knew that the tenderers would rely on the information. Therefore the consulting engineers had a duty to ensure that the information was accurate. They failed in that duty, thereby causing economic loss to the contractor. The contractor was entitled to recover the contractor's loss directly from the consulting engineers.

Clause 8.1 of AS2124 provides a contractor with a potential source of recompense for errors in the principal's documents. It requires the contractor to notify the superintendent of an ambiguity or discrepancy. It is only when a direction of the superintendent causes the contractor to incur more cost than the contractor could reasonably have expected at the time of tendering that the contractor is entitled to extra recompense.

The claim is usually not with respect to a particular error, omission or discrepancy but that generally the contract documents were below a reasonably acceptable standard or the standard that the tenderer might reasonably have expected. The problem is

whether anything in the contract or the law requires that the drawings and specification should be of a certain standard.

The importance of cl. 8.1 is that by making provision for errors and discrepancies in the contract documents, the principal is, by necessary implication, not promising that they are without errors and discrepancies. This makes it difficult for the claimant to say that the principal engaged in misleading conduct. Some principals amend cl. 8.1 because they see it as a source of liability rather than an important protection for the principal.

12.3.4 Bill of quantities

There is no universally accepted definition of a 'bill of quantities'. In AS2124, it is defined as: 'A document named therein as a Bill of Quantities issued to tenderers by or on behalf of the Principal, stating estimated quantities of work'.

Under AS2124 the bill of quantities forms part of the contract. The part it is to play in the contract depends on which alternative in cl. 4.1 has been chosen. It is always part of the contract for adjusting prices. But it is only when 'Alternative 2' in cl. 4.1 is chosen that the contractor is to rely on the bill for the description of the work to be carried out. If 'Alternative 2' is chosen, then the bill forms part of the specification of the work. If 'Alternative 1' is chosen, then the bill must not be used as a description of the work. It is then only for the purpose of pricing and, perhaps, claiming an extension of time (see cl. 35.5(b)(ii)).

All quantities in a bill of quantities or schedule of rates are 'provisional' in the sense that the actual quantity of work may be more or less. The bills can include lump sums and rates. The same document can be a bill of quantities or a schedule of rates depending on the name given to it by the principal (see definition of 'bill of quantities' in cl. 2).

An error in a quantity for which a lump sum is accepted is adjusted as for a variation to the work (see cl. 3.2). Payment for quantities for which a rate is accepted is calculated by multiplying the measured quantity of work actually performed by the rate. Care must be exercised to determine whether the principal has accepted a rate or a lump sum for the work. When a bill of quantities is used, it is common to include rate items but to end up with a lump sum. Usually the principal accepts the lump sum. In that event, even though there is a rate in the bill for certain work, the difference between the actual quantity and the scheduled quantity must be valued as a variation to the work. It is

anomalies such as this that have caused some principals to replace bills of quantities with schedules of rates.

There is provision in the annexure of AS2124 for 'limits of accuracy' applying to quantities for which the principal accepted rates. If quantities are greater or less than the limits, the quantities outside the limits are valued as for a variation (see cl. 3.2). Some consultants fail to include limits of accuracy in contracts. This is a grave error. The limits of accuracy are more important for the protection of the principal than for the contractor.

If quantities grossly exceed the estimate in a bill or schedule provided by the principal, the contractor will usually have a remedy (even if it is found outside the contract and in the Trade Practices Act). In the absence of limits of accuracy, the principal will not have a remedy. Where a contract includes rate items and no limits of accuracy, a tenderer who spots that a quantity is underestimated may tender a high price for that item but low prices for other items, with a view to making a windfall profit on the error.

Generally, engineers seem to have followed the lead of the NSW Department of Public Works and Services and now there will commonly be found in any 'schedule of rates' an item as follows to be priced by the tenderer: 'All work and obligations under the contract not included elsewhere in the schedule of rates'.

If that item is used, there is no need for cl. 3.3 of AS2124. However, the same protection is not achieved by simply deleting cl. 3.3. or amending cl. 3.3 in an endeavour to eliminate claims for omitted items. The only answer is to ensure that there are no omitted items. This is achieved with a simple item such as that set out above.

Some argue that this is unfair to tenderers. Is it unfair to ask tenderers to price all the work required by the contract? Contractors have tried in vain to get around this strategy for avoiding claims. There appears to be no reported case on the matter and it seems that the only way around the strategy is a claim in tort or under s. 52 of the *Trade Practices Act 1974* or s. 42 of the *Fair Trading Act 1987* (NSW) or the equivalent section in the Fair Trading Act of another State. Such claims would involve proof of misleading or deceptive conduct. Merely asking tenderers to price all the work is not misleading or deceptive conduct but it may be possible to draft a bill of quantities or a schedule of rates that is misleading.

12.3.5 Shop drawings

The contract often requires the contractor to provide the shop drawings. These are usually prepared by subcontractors for the supply only or the supply and fix of items. If the contract requires the contractor to obtain the superintendent's approval for the use of shop drawings, cl. 8.4 provides that the superintendent's approval will not relieve the contractor from responsibility for errors or omissions or from compliance with the requirements of the contract.

Despite the attempts of cl. 8.4 to protect the principal and the superintendent, the approval by the superintendent of drawings submitted by the contractor frequently relieves the contractor of some liability or gives the contractor a right against the superintendent for negligence. Some principals now adopt the approach of requiring the contractor to provide the contractor's drawings to the superintendent 28 days before the contractor uses them for work, but the drawings are not submitted for approval. The principals have a special condition to this effect and to the effect that the superintendent is not bound to inspect the drawings or to point out errors. This has the advantage that the superintendent has 28 days to find errors in the drawings or to order variations, but no liability to the contractor for not finding errors. Moreover, the contractor cannot say that the superintendent approved of drawings and therefore approved of a variation. A requirement for approval of drawings by the superintendent can never be of benefit to the principal.

An example may serve to illustrate the risk involved for the principal when a contractor is required to obtain an approval. Assume that a contractor is to design and fabricate a steel footbridge over a gap 30 metres wide. Assume that the specification provides that the contractor must submit shop drawings for the superintendent's approval before starting the work. Assume that the contractor makes a mistake and the shop drawings are for a bridge only 25 metres long — 5 metres too short. Assume that the superintendent approves the shop drawings without picking up the error. The contractor fabricates the footbridge, brings it to site and starts to erect it before the error is discovered. Naturally, the superintendent will have to reject the work and direct the contractor as to what the contractor must do (see cl. 30 of AS2124-1986). Assume that the superintendent directs the contractor to submit new shop drawings and to fabricate a new bridge. Assume that this causes the contractor a loss of \$100 000. In

respect of the first (incorrect) shop drawings, both the contractor and the superintendent were negligent. Both missed the error in the shop drawings.

The contractor might succeed in an action in tort against the superintendent on account of the superintendent's professional negligence in approving the drawings without properly checking them. The contractor's claim against the superintendent would be for \$100 000. But because the contractor was also negligent, the court would award the contractor only a portion of the \$100 000. If the contractor was 60 per cent to blame and the superintendent was 40 per cent to blame, the court would award the contractor only \$40 000. The proportion reflects the contractor's contribution to the loss. This is the doctrine of 'contributory negligence'.

In some situations where the superintendent has approved unsuitable shop drawings, design, samples or work, it may be possible for the contractor to avoid loss completely by raising the doctrine of estoppel. In legal proceedings, a court will sometimes refuse to let a party go back on an approval. For example in the case of the footbridge, if the court ruled that the principal could not go back on the superintendent's approval of the 25 metre structure, the superintendent's direction to submit new shop drawings and to fabricate a new bridge would be a direction to do extra work. It would be a variation for which the contractor would be entitled to be paid extra.

A discussion of the law of estoppel is beyond the scope of this book. It suffices here to say that when the superintendent approves of defective shop drawings and the contractor is thereby misled, the risk of the contractor succeeding in a claim against the superintendent or the principal is very real. As well as contributory negligence and estoppel, there is the possibility of a claim under statute for misleading or deceptive conduct in trade or commerce (s. 52 of the *Trade Practices Act 1974* or s. 42 of the *Fair Trading Act 1987* [NSW] or the equivalent section in the Fair Trading Act of another State).

These risks can be avoided by simply not including in specifications any requirement for the superintendent to approve drawings or any other work of the contractor. Retain a requirement for the contractor to provide the drawings and any other information, but don't tell the contractor that they are approved or satisfactory, or otherwise give any indication that might lead the contractor to rely on the superintendent.

The superintendent has a separate duty to the principal, and the fact that the superintendent does not communicate approval

to the contractor does not lessen the work of the superintendent. It only reduces the risk of the superintendent and the principal. If the superintendent finds an error, the superintendent should notify the contractor with words such as, 'the superintendent has found this error in your drawings/work. The superintendent has not checked your drawings/work for any other errors'. The latter may be untrue but no liability can arise from an untruth that does not mislead the contractor and thereby cause loss to the contractor. Telling the contractor that the superintendent has not checked the drawings cannot cause the contractor to rely on the superintendent's checking of the drawings.

However, when a contract provides that drawings must be submitted for the superintendent's approval, then the principal must ensure that the superintendent does assist the contractor by properly checking the drawings. Such approvals are for the benefit of the contractor, not for the benefit of the principal.

12.3.6 Cash flow statement

Contracts sometimes call for the contractor to provide a predicted cash flow for the work. Often principals request an estimate, in advance of progress claims. The principal may have to adjust financing of the project in accordance with the predicted cash flow and contractors should take care in ensuring that their predictions are as accurate as possible. The estimating of cash flow may be based on the priced bill of quantities and the construction program or on standard S-curves. Whatever the predicted cash flow, the principal is still obliged to pay all progress claims. An exception is where there is a special condition fixing the maximum amount of progress claims.

If a principal has a limit on funds available in one financial year, the principal may, when drafting the contract, insert a special condition that the principal's liability for progress payments will not exceed a specific amount in the financial year.

12.4

GENERAL CONTRACT CLAUSES

12.4.1 Evidence of contract

The contract between the principal and the contractor can be evidenced by a 'formal instrument of agreement' executed by the contracting parties. This is a written contract comprising all the

contract documents and signed by both parties, as distinct from a written contract comprising separate tender documents and correspondence. Under AS2124, a formal instrument of agreement is only required if the conditions of tendering state that a formal instrument of agreement is required (cl. 6.2). The principal must prepare the formal instrument of agreement within 28 days after the date of acceptance of tender. For contracts for residential building work or domestic building work, there may be legislation requiring a specific form of contract, specific terms and specific procedures for execution, and service of a copy on the client (see Chapter 15).

Under AS2124, the contractor must execute the formal instrument of agreement within 28 days after being requested in writing by the principal to do so. Within 28 days after receipt from the contractor of the two copies of the formal instrument of agreement, duly executed by the contractor, the principal must execute both copies and have them stamped, if stamping is required by the applicable State law. One copy must be forwarded to the contractor (cl. 6.2).

‘Stamping’ of the contract means the affixing of a duty stamp (similar to a postage stamp) or the stamping (with an ink stamp or an impressed stamp) by the Stamp Duties Office (or the appropriate State office for the collection of State revenue). A contract is ‘under hand’ when it is simply signed and does not have a seal on it. Stamp duty is a State tax. The need, if any, for stamping and the amount of stamp duty varies from State to State and depends on the nature of the contract (e.g. for domestic or commercial building work). On most contracts for carrying out construction work, it is a nominal amount. The importance of stamping is not only that a fine is payable for not stamping (when required by law) but that an unstamped contract may not be able to be used in an arbitration or in litigation (see the appropriate Stamp Duties legislation of the particular State or Territory).

Until the formal instrument of agreement is executed, the agreement in writing between the contractor and the principal for the execution of the works constitutes the contract between them (cl. 6.1). It is not uncommon for the principal to dispense with the need for any formal instrument of agreement and to rely on the tender and letter of acceptance to evidence the contract.

When a formal instrument of agreement is prepared, it is important that it does not include any new material. It is a

historical record of a contract already made. At the back of AS2124 is AS2127-1986, which is a form of 'formal instrument of agreement'. To make up a 'formal instrument of agreement' it is only necessary to gather together the tender invitation document, the tender and the letter of acceptance and attach AS2127, completing the blanks in AS2127. Sometimes there have been counter-offers, which form part of the contract. These should also be included.

There is no definition of 'the contract' in AS2124. This is deliberate. There are two uses of the term 'the contract'. One refers to the initial agreement made between the parties. This may be comprised in a document (e.g. the formal instrument of agreement, if any) or it may be oral, or partly written and partly oral. The other refers to the agreement as it exists at any particular time, including variations. When speaking of breach of contract or termination of contract, it is the second meaning of the term that is being used.

A contract can incorporate documents by reference. For example, the NSW DPWS uses AS2124-1996 but does not physically incorporate a copy in its tender documents or contracts. Instead the Department states: 'The General Conditions of Contract AS2124-1986 together with the Annexure shall form part of this contract'.

Incorporating documents by reference can save paper, time and cost. However, documents incorporated by reference must be documents of which, without too much difficulty, the other party can obtain copies.

12.4.2 Interpretation (definitions)

Most construction contracts include a list of defined terms. In cl. 2 of AS2124 the important contract terms and the contract parties are defined. Some examples follow.

The 'Date *for* Practical Completion' is the date originally agreed by which the contractor must bring the works to the stage of practical completion and handover. That date can be changed by extensions of time granted by the superintendent. This should be distinguished from the 'Date *of* Practical Completion', which is the date certified by the superintendent as the date on which the work reached practical completion.

'Day' is a calendar day, not a working day. This frequently causes unnecessary confusion when it comes to extensions of time. The contractor claiming an extension of time can claim in several ways, for example:

- 1 that the contractor was delayed five working days and claims an extension of time of five working days
- 2 that the contractor was delayed seven days, five of which were working days and the contractor claims seven days' extension of time
- 3 that the contractor was delayed from 1 May to 7 May, both dates inclusive (5 working days) and requests that time for practical completion be extended from the present date 1 June to 9 June which, bearing in mind that in that period there is a public holiday, amounts to five working days' extension.

If the contractor merely claims a specified number of days' extension without regard to whether the days of delay and the days of extension are working days, confusion will arise.

The definition of 'practical completion' is important. It is not merely the stage in the execution of the works when they are complete except for minor defects. If there are any omissions or defects, then before practical completion is reached, the superintendent must be satisfied that the contractor has reasonable grounds for not promptly rectifying the defects or omissions. If the contractor seeks a certificate of practical completion and is aware of any defect or omission, the contractor should explain to the superintendent why the contractor has reasonable grounds for not rectifying the defect or omission before practical completion.

'Works' are the permanent works to be handed over to the principal, whereas 'work under the contract' covers all work, including the contractor's temporary works and other obligations of the contractor.

12.4.3 Nature of contract

Under AS2124-1986, cl. 3.1 contains the basic promise by the contractor to complete the work and by the principal to pay the contract price. Under any construction contract, there are two ways that the price for any item work can be fixed. One is to agree on a lump sum for the item of work, irrespective of the actual quantities or measurements. The other is to agree on a rate. In that event, the total price will depend on the measurement of the units to which the rate is to apply.

A contract in which there is an agreed lump sum for all the work is usually called a 'lump-sum contract'. A contract, which includes rates for items of work (whether all or some) is usually called a 'schedule of rates contract'. A contract that provides for payment of actual costs plus a percentage is usually called a 'cost-plus contract'. In fact the contract price is a rate, namely the rate at which costs are incurred plus a rate (percentage) on top.

12.4.4 Contract guarantee

A contract guarantee (in AS2124 called 'security') in the form of cash, bonds or inscribed stock, interest-bearing deposit in a trading bank, approved unconditional undertaking given by an approved financial institution or insurance company, or other approved form of security, is usually required to be given by the contractor in accordance with the terms of the contract for the purpose of ensuring the due and proper performance of the contract (cl. 5.3). Such an unconditional undertaking is usually called a 'bank guarantee' although, strictly speaking, it is not a guarantee but a promise to pay a certain amount on demand. The amount of security is stated in the Annexure (cl. 5.2). Clause 42.4 (Alternative 2) has provision for additional security for progress payments for unfixed materials. That additional security is lodged when a progress payment is required and it is released when the unfixed materials are incorporated into the works.

Sometimes a construction contract provides for retention moneys instead of or as well as the security referred to in the preceding paragraph. Retention moneys are usually a prescribed amount, between 2.5 and 10 per cent, of each progress payment until the principal holds a certain percentage of the contract price. Retention moneys serve the same purpose as other forms of security. Some contracts give the contractor the right to elect between providing security by way of a bank guarantee or retention moneys or to, at any time, replace retention moneys by a bank guarantee.

Although AS2124 also has provision for security by the principal, it would be extremely rare to find a construction contract for commercial construction work that requires the principal to put up security to ensure payment of the contractor. In the case of residential or domestic building work, legislation may limit the amount of the deposit that a builder can require (see Chapter 15). In New South Wales, the deposit that can be required of an owner under a contract for residential building work is limited by s. 8 of the *Home Building Act 1989* (NSW). It is presently 5 per cent if the contract is for more than \$20 000 and 10 per cent if the contract price is \$20 000 or less. A similar limitation exists in s. 11 of the *Domestic Building Contracts Act 1995* (Vic.).

Security is usually provided in the form of the unconditional undertaking set out on p. 38 of AS2124. This is commonly called a 'bank guarantee'. Banks charge contractors a fee (usually 1.5 per cent per annum of the amount of the security), while the bank guarantee remains in place. A bank will often require a contractor

to lodge money on deposit with the bank so that if the bank is called on to pay the principal the amount of the undertaking, the bank will not be out of pocket. The contractor can earn interest on the deposit whereas, unless 'Alternative 2' of cl. 5.9 has been adopted, the contractor will not receive interest on cash or retention moneys held by the principal. Security, if required by the contract, must be lodged within 28 days of the 'date of acceptance of tender' (cl. 5.4). Failure to lodge security within the time specified will be regarded as a substantial breach of contract (cl. 44). Unless cl. 5.6 has been omitted, the contractor may substitute at any time additional security in place of retention moneys (cl. 5.6).

The principal's right to call on the bank (or other financial institution) to meet an unconditional undertaking only arises when the contractor is indebted to the principal and the moneys available to the principal by way of progress payments or retention moneys are insufficient to meet the debt (cl. 42.10). If a contractor fears that without a contractual right to do so the principal will call up the security, the contractor can apply to the Supreme Court for an injunction to stop the principal calling up the security.

12.4.5 Contract sum

Neither the standard conditions of contract that form AS2124 nor the Annexure to AS2124 state the amount of the contract price or the contract sum. 'Contract price' and 'contract sum' are not the same. The contract price is not defined or mentioned in AS2124. It is the amount the principal must pay for the work and it can change from time to time. The contract sum never changes and is defined in cl. 2. It is significant only for fixing the amount of insurance under cl. 18(i).

The contract sum is fixed at the start of the contract. It is the amount of the accepted lump-sum tender price plus the product of the rates and estimated quantities for the items for which the principal accepted rates. The contract sum will rarely equal the contract price. This is because actual quantities for which rates have been accepted will usually differ from the estimated quantities at tender time and there will be adjustments for variations. Sometimes when drawing up a contract the contract sum is stated. The contract price will be determined by the contract itself, in particular the tender and tender schedules and adjustments for variations and directions, and to state an amount as the contract price or the contract sum can lead to ambiguity. It is preferable not to try to insert in any 'formal instrument of agreement' a contract price or a contract sum.

LATENT CONDITIONS

Latent site conditions are a major aspect of risk in construction. The risk may be allocated very differently in different contracts. In Australia, 'latent conditions' are most frequently defined in the terms found in AS2124-1986. However, in any particular contract, the definition must be carefully examined because there are many variations of the definition. In cl. 12.1 of AS2124 'latent conditions' are defined as:

- 1 physical conditions on the site or its surroundings, including artificial things but excluding weather conditions at the site, which differ materially from the physical conditions, which should reasonably have been anticipated by the contractor at the time of the contractor's tender if the contractor had:
 - examined all information made available in writing by the principal to the contractor for the purpose of tendering
 - examined all information relevant to the risks, contingencies and other circumstances having an effect on the tender and which is obtainable by the making of reasonable inquiries
 - inspected the site and its surroundings
- 2 any other conditions that the contract specifies to be latent conditions.

The words 'at the site' in the second line of the definition above are frequently omitted because they lead to ambiguity. Latent conditions may include rock, hazardous substances, utility services or other physical conditions but would not include shortage of labour or materials or strikes. The physical conditions that qualify as latent conditions will usually be under the surface, but they could be asbestos in areas above ground, gas emissions from an adjacent site, or a latent defect in a structure on which the contractor has to perform work. There are many possibilities.

By way of comparison, the definition of a latent condition under cl. 1.1 of PC-1 1998 (the Property Council Project Contract) only covers 'ground conditions'. It provides: 'Any ground conditions at the site, excluding ground conditions resulting from inclement weather wherever occurring, which differ materially from those that should have been anticipated by a prudent, competent and experienced contractor if it had done those things that the Contractor is deemed to have done under clause 7.1'.

Clause 7.1 of PC-1 provides that the contractor is deemed to have assessed the risks that the contractor is assuming under the contract. Note the ambiguity in the definition of 'latent condition' under

PC-1-1998. Does the phrase 'differ materially' qualify 'ground conditions' where it appears first in the definition, or second, or both?

Under CIC-1 (the RAIA Construction Industry Contract), cl. F6 defines a latent condition as follows: 'A latent condition is a physical condition on or underlying the site, which a competent contractor would not have anticipated if the contractor had reviewed the site information and thoroughly inspected the site before executing this contract'.

Under AS2124 (and most contracts) when a latent condition is encountered, the contractor is required to notify the superintendent forthwith and where possible before the physical conditions are disturbed (cl. 12.2). Delay caused by a latent condition (whether or not any variation to work is involved) may justify an extension of time under cl. 35.5 and extra cost under cl. 12.3. A common misconception is that under AS2124, whenever the contractor notifies the superintendent of a latent condition, the contractor must or is entitled to suspend work until the superintendent gives a direction. Under AS2124, after receipt of notice of a latent condition, the superintendent is not required to do anything. Sometimes the superintendent will direct work to be suspended while the superintendent decides whether or not to direct a variation. Clause 34 deals with suspension of work. Unless the superintendent gives permission to suspend work or a direction to vary the work, the contractor must continue notwithstanding the existence of the latent condition.

Compare this with cl. F7 of CIC-1, under which the architect administering the contract must promptly give an instruction to the contractor when the contractor gives notice of a latent condition. This imposes a risk on the architect and the principal that does not exist under AS2124. For example, assume that the contractor is excavating for a swimming pool and finds that the ground is softer and wetter than expected and liable to subside unless the contractor takes measures to dewater the site and shore the sides, and that the contractor did not anticipate these measures at tender time. It seems that the architect under CIC-1 has the obligation to design a safe system of work for the contractor. Compare this with the situation under AS2124, where the superintendent does not have to give any direction. It is up to the contractor to design a safe system of work but the superintendent nevertheless has the power to give a direction should the superintendent elect to do so.

A latent condition may involve the contractor in extra expense, whether or not the latent condition necessitates a variation to the specified work. If a variation to the specified work is required

then the superintendent should, under cl. 40.1, direct a variation. The variation will then be valued under cl. 40.2. There is no need for a latent condition clause where the only additional expense is in carrying out a variation to the work directed under cl. 40.1. The importance of cl. 12.3 is that it gives the contractor a right to recompense where a variation to the work is not directed under cl. 40.1. There are many latent condition clauses in use in Australia that only provide recompense where the latent condition necessitates a variation to the works. Such a latent condition clause will probably provide no entitlement to the contractor that would not exist in its absence.

Before tendering, a contractor should check whether there is a latent condition clause and, if there is, the contractor should check carefully what entitlements it provides and what notices the contractor is required to give in order to obtain or preserve those entitlements. Under AS2124, there is a time bar on some claims arising out of a latent condition. Costs incurred more than 28 days before the contractor gives notice of a latent condition are not recoverable (cl. 12.4). It should be noted that the time bar only refers to a valuation pursuant to cl. 12.3. If a variation is directed under cl. 40.1, a valuation is made pursuant to cl. 40.2.

A latent condition may necessitate:

- 1 delay and additional expense to perform the specified work
- 2 a change from the specified work
- 3 both 1 and 2.

In the case of 2, the inclusion or deletion of cl. 12 does not transfer risk. Furthermore, if the work is to proceed, a variation must be ordered under cl. 40.1. Then cl. 40.2 provides for extra recompense. The deletion of cl. 12 will not defeat a claim for extra where a variation is involved. If the variation is not ordered then the contract may be frustrated. On the other hand, where there is no need to direct a change to the drawings or the specification, the deletion of cl. 12 will impose a risk on the contractor. Many latent condition clauses fail to make provision for the case where a latent condition does not necessitate a variation. The JCC-1993 contract conditions, the NPWC3 Special Condition of Contract for latent conditions and earlier editions of AS2124-1981 fall into this category.

An example may serve to illustrate the difference. Assume that a contract is for the construction of a municipal swimming pool. Assume that in the course of excavation in what the contractor reasonably expected to be sand, the contractor finds rock floaters. They have to be excavated but there is no work additional to that

in the specification. The specification required excavation. The difference is that the excavation is more difficult than expected. In this instance, a latent condition clause such as cl. 12 of AS2124-1986 will give the contractor a right to additional recompense. That right would not exist if there was no cl. 12.

But the situation would be different if it was not rock floaters that were discovered but a sewer. Assume that to build the pool in the design location, the sewer must be diverted by Sydney Water Corporation or the footing of the pool must be redesigned so that the sewer is protected. Assume that the contract does not include a provision such as: 'If it is necessary to divert a service or to pay the authority which owns or controls the service to divert it, the contractor will divert the service or arrange for and pay the authority to divert the service'. Hence the work of diverting the sewer or arranging for and paying Sydney Water Corporation to divert it is not work under the contract. It is additional work. If, at the superintendent's request, the contractor performs this additional work, the contractor is entitled to be paid extra for doing so.

Now assume that the sewer is not to be removed but the footings of the pool are to be redesigned. There is no provision in the contract requiring the contractor to do design work. If the superintendent provides a redesign to the contractor, that will be a variation. Hence, in this hypothetical contract, the contractor does not have to rely on a latent condition clause to recover extra recompense on account of the sewer. A classic example will be found in *Update Constructions v. Rozelle Child Care Centre* [1990] 20 NSWLR 251.

There is a commonly held misconception among contractors that the principal has some common law duty to provide subsoil information to tenderers. There is an equally commonly held misconception among principals that if misleading subsoil information is provided, the principal can be protected against liability by an exclusion clause. In the absence of an obligation in the construction contract itself, the principal has no common law obligation to provide subsoil information. But if the principal does provide such information, even if the principal has not been negligent or the information has been prepared by a consultant, the principal can have a liability to the contractor. Section 52 of the *Trade Practices Act 1974* and s. 42 of the *Fair Trading Act 1987* (NSW) (or the equivalent provision in the Fair Trading Act of another State) may create a liability for engaging in misleading or deceptive conduct even though there is no negligence and despite any exclusion clause.

However, there is a way to provide the information and avoid liability. The way is to ensure that the principal does not mislead the contractor. The mere fact that information is incorrect does not mean that the principal has engaged in misleading conduct. To obtain protection, the principal should, when providing the information state: 'This information may contain errors or omissions and may be misleading. The principal does not warrant its accuracy and will not be liable if the tenderer is misled by the information'.

12.6

RESPONSIBILITIES OF CONTRACTUAL PARTIES

12.6.1 Principal

Express obligations to be found in AS2124 are representative of the obligations to be found in most construction contracts. There are differences, however, and any particular construction contract must be examined to find its express terms.

Under AS2124, the principal must make enough of the site available to the contractor on or before the date for possession, as stated in the Annexure, to enable the contractor to start work and carry out the work in accordance with the requirements of the contract (cl. 27.1). The principal must pay the contract price to the contractor (cl. 3.1 and cl. 42.1). The principal is generally responsible for the accuracy of all information given by the principal concerning the site, including surveys of the site, services and land titles, and physical site conditions. After taking possession of the works at the date of practical completion, the principal must also allow the contractor reasonable access to the site for making good defects (cl. 37).

The principal has an obligation to ensure that there is a superintendent at all times and that the superintendent acts honestly and fairly and within the prescribed times or a reasonable time (cl. 23). Under AS2124 (unlike most forms of contract) the principal cannot 'hide behind' a decision of the superintendent. The principal has promised in cl. 23 that when the superintendent is exercising a function under the contract the superintendent will arrive at a reasonable measure or value of work, quantities or time. Hence, under AS2124, the failure of the superintendent to grant an extension of time when the contractor is entitled to an extension is a breach of contract by the principal. The contractor does not have to ask an arbitrator to grant an extension of time.

In any case, the arbitrator does not have power to grant an extension of time. The contractor can claim and the arbitrator can award whatever damages the contractor incurred by reason of the failure of the superintendent to grant the extension of time.

If 'Alternative 2' in cl. 18 or cl. 19 has been selected, then the principal will have an obligation to insure. When the principal has the obligation to insure, insurance is usually said to be 'principal-controlled insurance'. The principal has an obligation under cl. 17.2 to indemnify the contractor in respect of:

- 1 damage that is the unavoidable result of the construction of the works in accordance with the contract
- 2 claims in respect of the right of the principal to construct the work under the contract on the site.

An example of 1 (unavoidable damage) would be where the contract requires the contractor to demolish a building and, unbeknown to the contractor, the building belongs to another person. Another example would be where the foundations are constructed by the contractor in accordance with the contract but they prove to be under-designed and the building collapses. An example of 2 (claims in respect of the right of the principal to construct the works on the site) would be where a neighbour obtains an injunction to stop work because development approval had not been obtained.

As well as express obligations under the contract, the principal has contractual obligations implied by law, obligations under the law of tort and statutory obligations (see Davenport 1995). Obligations can also arise under the doctrine of restitution (see Davenport & Harris 1997). The most important of the contractual obligations implied by law is the duty not to prevent or hinder the contractor in the performance of the contractor's obligations. This is sometimes referred to as the 'Mackay v. Dick' principle after the case of that name ([1881] 6 App. Cas. 251). This is not an exhaustive list of the obligations of the principal.

12.6.2 Contractor

As with the obligations of the principal, the express obligations of the contractor to be found in AS2124 are representative of the obligations to be found in most construction contracts, but any particular construction contract must be examined to find its express terms. Under AS2124, the contractor must start work on the site within 14 days after the principal has given possession of the site (cl. 35.1). The contractor must execute and complete the

works in accordance to the contract documents (cl. 3.1) and in accordance with any directions of the superintendent (cl. 23), and must bring the works to practical completion by the date for practical completion (cl. 35.2).

If there is a bill of quantities, the contractor must lodge with the superintendent a priced copy of the bill of quantities on or before the expiration of the time for lodgement set out in the Annexure, or within such further time as the superintendent may direct (cl. 4.2).

The contractor must provide security in the form stated in the contract (cl. 5.2). Neither party to the contract can, without the written approval of the other, assign the contract (cl. 9.1). Apart from the work described in the Annexure, the contractor is not prohibited from subcontracting the work (cl. 9.2) but is liable for the acts, defaults and neglects of any subcontractor (cl. 9.3).

The contractor is responsible for all construction means, methods, techniques, sequences and procedures employed in the execution of the works and for co-ordinating all portions of and the execution of all portions of the works. The contractor is also required to proceed with the work with due expedition and without delay and give the superintendent reasonable advance notice of any information, documents or instructions required (cl. 33.1). The contractor is responsible for the supervision of the work and must keep a competent person on the site to supervise the work (cl. 25).

If a construction program has not been provided, the superintendent may request one. The superintendent also has power to direct in what order and at what time the various stages or parts of the work under the contract shall be performed (cl. 33.1). Since the exercise of the power may put the principal to additional expense (last paragraph of cl. 33.1), the superintendent should think carefully before giving the direction. The contractor must not, without reasonable cause, depart from:

- 1 a construction program included in the contract
- 2 a construction program furnished to the superintendent.

The contractor must comply with the requirements of the provisions of all Acts of Parliaments, ordinances, regulations or by-laws of all authorities and with the lawful requirements of public, municipal and other authorities that have jurisdiction over the site or the works (cl. 14.1). However, a distinction must be made between complying with the law in the manner of carrying out work and ensuring that the works comply with the law. For

example, assume that council's development approval requires that a stormwater retention tank be installed but the contract makes no mention of such a tank. The contractor can lawfully perform the contract even though the owner will be in breach of the development approval unless the owner has a tank installed. The contractor must correctly set out and establish the levels for the works in accordance with the information supplied by the superintendent (cl. 28.1 and cl. 28.2).

The contractor is not usually responsible for the errors in the information supplied by the superintendent provided the contractor has taken proper and reasonable steps to safeguard against such mistakes and provided the contractor has notified the superintendent in writing seeking directions (cl. 28.3). The cost incurred by the contractor in rectifying the error is valued as a variation (cl. 28.3).

The contractor is obliged to carry out variations as instructed by the superintendent provided they are within the scope of the contract (cl. 23 and cl. 40.1). In the construction industry, but not in AS2124, the term 'variation' is sometimes used to indicate a change in the contract conditions or the contract times or in the amounts payable under the contract. Under AS2124, a 'variation' is one of the changes described in sub-paragraphs (a) to (e) of cl. 40.1. It will be seen that each sub-paragraph refers to 'work'. A variation under AS2124 can only be to the work required under the contract.

While the superintendent can direct a change in the order of work (cl. 33.1), such a change should not be described as a variation. Similarly, the fact that the actual quantities of work differ from the quantities in the bill of quantities or schedule of rates should not be described as a variation. Quantities in the bill or schedule are only estimated quantities. Hence any difference between the estimate and actual quantities is not a change to the work to be performed and no direction is required to be given by the superintendent (cl. 3.2).

The contractor is also required to make good defects during the 'defects liability period' (cl. 37). The contractor has no entitlement to make good defects that become apparent after the end of the defects liability period, but that does not mean that the contractor escapes liability for the defects. The contractor is responsible for the care of the works and must make good damage even though the contractor did not cause the damage. This is an area in which AS2124 differs radically from JCC-C (compare cl. 8.01 of JCC-C). There are some exceptions, the main ones being damage caused by negligence of the principal

(cl. 16.3(a)) or defects in design provided by the principal (cl. 16.3(f)). The contractor may have an obligation to insure the works (cl. 18) and against public liability (cl. 19). This is not an exhaustive list of the obligations of the contractor.

12.6.3 Superintendent

The principal usually appoints an agent for the purposes of administering for the principal certain aspects of the contract. In Australia, the term 'superintendent' is the term most commonly used to describe this agent. Other titles include contract administrator (PC-1 1998), architect (CIC-1) and project manager. The powers and functions of the superintendent will depend on the agreement between the superintendent and the principal. The superintendent must be careful not to breach that agreement and not to exceed the powers delegated to the superintendent by the principal. Except for the powers given to the superintendent by the principal, the superintendent has no powers under the contract. The superintendent does not have a contract with the contractor and the superintendent is not a party to the contract.

As an agent of the principal, the superintendent must comply with all lawful instructions of the principal. If the principal directs the superintendent not to exercise a function, the superintendent must comply. A distinction must be made between lawful instructions and unlawful instructions. An instruction not to grant an extension of time would be a lawful instruction and the superintendent must comply. The failure of the superintendent to grant an extension of time may well put the principal in breach of contract (e.g. AS2124, cl. 23), but that is the principal's problem, not the superintendent's concern.

Now let us examine some possible directions of the principal that may be unlawful. A direction by the principal to the superintendent to certify as the date of practical completion 1 June when in the superintendent's opinion practical completion was achieved on the preceding 1 May, would be an unlawful direction. It would be a direction to give a false certificate.

Clause 42.5 states that the superintendent will give to the contractor a certificate stating the date of practical completion. If the superintendent gives to the contractor a certificate of practical completion which states as the date of practical completion a date that the superintendent does not honestly believe to be the correct date, the superintendent is deliberately engaging in the falsification of a document. The consequences for the superintendent personally could be serious.

If the superintendent were to receive a direction that the superintendent believes to be unlawful, the superintendent must not comply. 'Superior orders' is no defence to a prosecution for falsifying a document or to a claim by the contractor for damages. The contractor can have no claim against the superintendent personally for not issuing a certificate, but a claim could lie where the superintendent has deliberately certified as the superintendent's opinion something that is not in fact an opinion held by the superintendent. Other areas where the superintendent is required to give an opinion which must be the superintendent's own opinion include extensions of time (cl. 35.5), payment certificates (cl. 42.1), certificate under cl. 44.6 (cost of works) and the decision on disputes under cl. 46.1.

An instruction not to grant extension of time or not to give a reason for not granting an extension of time would be an instruction with which the superintendent must comply. But an instruction to give a false reason for not granting an extension of time would be an unlawful instruction. If the reason why the superintendent has not granted an extension of time or the full extension claimed is that the principal directed the superintendent not to grant the extension of time, then, in giving the notice under cl. 35.5 of the reason for not granting the extension of time, the superintendent must say that the reason is that the principal directed the superintendent not to extend time. Not certifying something will not make the superintendent liable to the contractor, but falsely certifying can do so. The contractor will have rights against the principal in respect of the principal's direction.

When faced with a difference of opinion between the principal and the superintendent, the superintendent might suggest to the principal that for the purpose of the exercise of the particular function, the principal should appoint another person (who may be the principal himself or herself) to exercise the function.

Under AS2124, the amount payable by the principal by way of progress payments is the amount determined objectively under cl. 42.2. Unlike most forms of contract, the certificate of the superintendent does not determine the amount payable. A judge's decision to the contrary is criticised by Davenport (1989b). In AS2124-1992, cl. 42 has been substantially amended and the superintendent's progress certificate creates a debt. Clause K11 of CIC-1 and cl. 12.8 of PC-1 1998 have a similar effect. The contractor can sue in the court for the amount in the certificate by what is called a 'liquidated claim'. The contractor can obtain a judgment in a matter of a month or so and the principal will be

bound to pay even though the principal may have a cross-claim equal to or exceeding the amount shown in the superintendent's progress certificate. The principal will be forced to pursue the principal's claim in arbitration but meanwhile will have to pay the amount certified by the superintendent. The problem is illustrated by *Merrit Cairns Constructions v. Wulguru Heights* [1995] 12 Build. CL 293.

Construction contracts let after 26 March 2000 for construction work in New South Wales are now subject to the provisions of the *Building and Construction Industry Security of Payment Act 1999* (NSW). This Act has most important implications for the role of the superintendent in New South Wales with respect to progress certificates. When a contractor makes a progress claim, the principal (not the superintendent) must, within ten business days, serve on the contractor a payment schedule stating the amount that the principal will pay in respect of the progress claim and the reasons why the principal will not be paying any portion of the claim. This is in addition to and distinct from the progress certificate which the superintendent must issue under the general conditions of contract. If the principal fails to serve the payment schedule within time, the principal automatically becomes liable to make a progress payment of the full amount of the progress claim and the contractor can recover that amount as a statutory debt. The principal may appoint the superintendent as the principal's agent for the purpose of issuing the payment schedule under the Act, but it is the principal's document and represents the principal's intention with respect to payment, not the superintendent's opinion on what should be paid. The implications of the *Building and Construction Industry Security of Payment Act 1999* (NSW) and suggested changes to standard forms (including combining the superintendent's progress certificate and the statutory payment certificate) are considered in Davenport (2000).

Subject to any limitations imposed by the principal, the superintendent has wide powers under the contract to:

- give certain written instructions
- vary the work
- direct extra work
- omit work
- approve variations for the convenience of the contractor
- accept defective work
- change the order of work
- suspend work
- extend time for practical completion

- create Separable Portions
- direct tests
- demand certain information
- issue payment certificates
- inspect and approve work
- certify practical completion
- issue certain oral instructions, which the superintendent must confirm in writing
- establish lines of communication: oral, written, fax
- maintain accurate records.

The role of the superintendent is often described as a dual role, one of the roles being described as that of an agent for the principal, the other as that of a valuer of work, certifier and assessor. In this latter capacity it is said that the superintendent must act 'independently and fairly' in reaching decisions. The advocates of the dual role often miss the point that at all times the superintendent is the agent of the principal and there is nothing inconsistent between being an agent and having to act 'independently and fairly'. A bank clerk must act 'independently and fairly' when dealing with the accounts of a customer. The clerk must disregard any instruction of the clerk's employer that would require the clerk to dishonestly value, certify or assess.

The checkout clerk at the supermarket has the same duty to act 'independently and fairly' when assessing the amount payable by the customer. The butcher's apprentice assessing the weight of the meat being bought by a customer has the same duty to act 'independently and fairly'. In each instance any attempt by the employer to influence the employee to value, certify or assess otherwise than 'independently and fairly' would be unlawful.

If a superintendent negligently performs the work that the superintendent has agreed to perform for the principal, the superintendent can be liable to the principal for any damages that the principal suffers as a consequence. If the superintendent negligently over-values work or grants an extension of time when the superintendent should not have done so, the superintendent can have a liability to the principal. When negotiating the terms of the appointment as superintendent, the superintendent can negotiate the limits of the superintendent's liability.

Where the superintendent acts dishonestly by falsely certifying as the superintendent's opinion something that is not in fact the superintendent's opinion, the superintendent can be liable to the contractor, who is misled by the false representation and suffers loss as a consequence. However, where the superintendent acts

honestly, the superintendent would not appear to have any liability to the contractor on account of negligence or error in certifying under AS2124 (Davenport, 1989b). The opposite is the case under contracts such as PC-1 1998 and CIC-1 where the amount to which the contractor is entitled is the amount certified by the superintendent and an under-certification means that the contractor's entitlement is less than it should be. On the other hand, an under-certification under AS2124-1986 does not affect the contractor's entitlement.

Under AS2124, the principal must ensure that at all times there is a superintendent and that in the exercise of the functions of the superintendent under the contract, the superintendent:

- 1 acts honestly and fairly
- 2 acts within the time prescribed under the contract or, where no time is prescribed, within a reasonable time
- 3 arrives at a reasonable measure or value of work, quantities or time (cl. 23).

This provision has the practical effect that if the superintendent fails to perform a function ascribed to the superintendent, the contractor can claim any resulting loss from the principal.

For example, if the superintendent fails to issue a certificate of practical completion when the superintendent should do so, the contractor has a claim against the principal. If the superintendent values the work at \$10 000 and the principal only pays \$10 000 when a reasonable value is \$12 000, the contractor can recover the difference from the principal, plus interest (cl. 42.9). If the superintendent fails to grant an extension of time for practical completion when an extension is justified, the contractor can recover any resulting loss from the principal. Under AS2124-1986 the principal accepts responsibility for the proper performance by the superintendent of the functions of the superintendent. This is not always the case under other forms of general conditions.

Any direction given by the superintendent should be in writing unless the superintendent is of the opinion that the matter is one of such urgency that the contractor should proceed without awaiting a written direction, in which case the superintendent must confirm the direction in writing as soon as practicable thereafter (cl. 23). If the contractor is not prepared to comply with an oral direction, the contractor can under cl. 23 request the superintendent to confirm the direction in writing. Time for compliance by the contractor is suspended from the time the

contractor gives the superintendent a written request for written confirmation until written confirmation is given by the superintendent.

The superintendent is required to supply the information necessary to enable the contractor to set out the works and must provide the contractor with such survey marks as are specified in the contract (cl. 28.1). In the event of an ambiguity or discrepancy in the contract documents, the superintendent must direct the contractor as to the interpretation to be followed.

There can be more than one superintendent. The singular includes the plural. Some principals appoint a different person as superintendent for the purpose only of giving a decision on disputes under cl. 46.1. There is much to be said for having someone independent consider matters in dispute. The superintendent administering the contract is often too personally involved in the administration of the contract to be able to give a truly objective decision under cl. 46.1. A contractor is unlikely to be satisfied with a decision of the superintendent under cl. 46.1 unless the contractor considers that the superintendent has been completely objective.

12.7

ASSIGNMENT AND SUBCONTRACTING

12.7.1 Assignment

Assignment involves the transfer of part or the whole of the rights or obligations of one person to another. If A owes B \$100, and B assigns the debt to C, then A owes the \$100 to C and C can sue A for it. This is the assignment of a right (to collect a debt) or an asset. The right being assigned may be an existing debt or one that will come into existence later, such as a right to future progress payments.

An obligation can only be assigned when the person having the right to enforce the obligation agrees. The assignment is, in effect, a release of the assignor and a new contract with the assignee. A right (benefit) can generally be assigned unless the contract prohibits assignment. The main right or benefit for the contractor is to receive payment when due, and for the principal it is to have the work carried out. The main obligation or burden for the contractor is the duty to complete the works and for the principal it is the duty to pay money.

The AS2124 contract contains an express prohibition of assignment of the contract without consent by either party to the contract (cl. 9.1). Assignment should not be consented to without careful consideration of all the implications. Usually the assignor (contractor 1) wants a release of all obligations past and future and the assignee (contractor 2) is only considering assuming future obligations. Assignment should be effected by a deed of assignment drawn up by a lawyer. The deed should cover the question of whether contractor 1 is to be released of all liability or only certain liability, usually the obligation to complete the work. If contractor 1 is released of all liability, it may be that a third party will subsequently make a claim on the principal in respect of something done by contractor 1 and the principal may have no recourse against contractor 2 for an indemnity. Contractor 1's insurer may also escape liability, but contractor 2's insurer will usually not be liable for something that occurred before contractor 2 took out the policy.

Assignment of the contract would not automatically effect an assignment of security, which is by way of an unconditional undertaking or insurance. It would be usual to make it a condition of the principal's consent to an assignment that new security and new insurance in the name of the assignee is produced before assignment. Sometimes a party will ask that assignment be back-dated. This should never be done. It can lead to many problems.

Novation is the process of replacing a contract by a new contract (see Chapter 6). In the manner in which the term is usually used in the construction industry, it is an assignment of both rights and obligations. The term 'novated contracting' has been coined to describe the case where the principal enters a consultancy contract with a design consultant, for example an architect, and separately enters a design and construct contract with a builder. At some stage during the design process the principal novates (assigns) the consultancy contract to the builder. The builder becomes a party to the consultancy agreement in place of the principal. The builder uses the architect as the builder's architect for the D&C contract. To work effectively, the novation conditions must be clearly spelt out in both the consultancy contract and the D&C contract. The process often fails to work effectively. Both the consultancy contract and the D&C contract should make provision for the case where the architect's (novated) contract with the builder is terminated prematurely or for some reason the novation cannot be effected. The problem of premature termination is the same as that which arises when a nominated subcontract is prematurely terminated.

12.7.2 Subcontracting

Subcontracting is quite different from assignment and does not have the same problems. When work is subcontracted, the contractor still remains liable to the principal for the performance of the work (cl. 9.3). Subcontracting does not release the contractor from any liability. There are qualifications to this when the subcontractor is a designated or nominated subcontractor (cl. 10).

If the contractor wishes to subcontract work described in the Annexure (cl. 9.2), AS2124 requires the contractor to obtain prior written approval. Work not described in the Annexure may be subcontracted without approval.

12.7.3 Designated, selected and nominated subcontracts

Designated subcontractors differ from nominated subcontractors only in that the contractor knows who the designated subcontractor is before the contract is made. Therefore there is no right of objection to the nomination. Selected subcontractors are selected by the contractor from a list of approved subcontractors.

The principal nominates nominated subcontractors. It cannot be too strongly emphasised that although the nominated subcontractor may be nominated, selected or approved by the principal or the superintendent on behalf of the principal, the nominated subcontract made by the contractor is essentially of the same character as other subcontracts made between the contractor and ordinary subcontractors. A particular attraction to specialist subcontractors of nominated or designated subcontracts is the direct payment provision of cl. 10.6. This is particularly useful to both the subcontractor and the principal in the event of insolvency of the main contractor.

The scheme of nominated subcontractors is an ingenious method of achieving two objectives, which at first sight might seem incompatible. The employer wants to choose who is to do the prime cost work and to settle the terms on which it is to be done and at the same time to avoid the hazards and difficulties which might arise if he entered into a contract with the person whom he has chosen to do the work. (*North-West Metropolitan Regional Hospital Board v. T.A. Bickerton & Son Ltd*, [1970] 1 All ER 1039)

Nominated subcontractors are commonly chosen for those sections of the works for which provisional sums have been made in the contract. The principal cannot require the contractor to subcontract work to a particular subcontractor unless the work to be subcontracted was originally specified as nominated, selected or designated subcontract work. The superintendent cannot, by way

of a variation, create nominated, selected or designated subcontract work.

The principal nominates or selects nominated subcontractors and the contractor is obliged to enter into a subcontract with such nominated subcontractors unless the contractor raises reasonable objection (cl. 10.4). The principal accepts no responsibility for the default of a selected subcontractor but in the event of termination of the engagement of a designated or nominated subcontractor, the superintendent must nominate another subcontractor to complete the subcontract work and the principal will be responsible for the extra cost resulting from the re-nomination (cl. 10.7).

A warranty is particularly important where the subcontractor has designed the subcontract work. Under AS2124-1986 the contractor is not liable for the design or suitability of the designated, selected or nominated subcontract work unless the responsibility is expressly stated in the contract (cl. 10.5). It is common practice for the principal to have a collateral agreement with the nominated subcontractor under which agreement the subcontractor agrees to indemnify the principal against certain losses. A form of collateral agreement will be found in Flowchart Analysis AS2124-1986 (Davenport 1998).

On account of the difficulty of making the contractor responsible for the defaults of a nominated subcontractor and the problems that arise when a nominated subcontractor refuses to contract with the main contractor, or a nominated subcontract is prematurely terminated, there has been a tendency in recent years to avoid the term 'nominated subcontractor'. But the problems inherent in nominated subcontracting do not disappear if the contractual relationship is given a different name. For example, in D&C contracts, instead of designating the architect selected by the principal as a nominated subcontractor, it is common to see the term 'novated contracting' or similar terms used. The architect becomes a subcontractor to the D&C contractor. The architect to be used by the contractor has been designated by the principal and is, in essence, no different from a nominated subcontractor.

12.8

TIME

All contracts have a time element. The overall time allowed for completion of the work described in the contract may be established by:

- specification by the principal
- nomination by the contractor at the time of tendering.

The time for completion may be finite, no extensions allowed, or it may be extended due to changed circumstances after the contract is commenced. If there is not provision for extension of time that is in broad enough terms, the principal will not be able to recover liquidated damages for delay (Davenport 1991b).

Most contracts have a time for 'practical completion' as distinct from 'completion'. The difference is very important from the point of view of preserving the principal's right to liquidated damages. The principal's damages for delay become less or nominal after the principal takes over the works and begins to use them. If liquidated damages were to continue at the same rate after the principal takes over the works as before, they would probably be held to be a penalty and void. Hence liquidated damages have to be tied to the date of taking over and using of the works as distinct from completion of the works. The key time events are:

- closing date for tenders
- date of acceptance of tender (defined in cl. 2)
- date that the site is made available to the contractor
- times for progress claims (cl. 42.1)
- date for practical completion (cl. 35.2)
- date of practical completion (cl. 42.5)
- expiration of defects liability period (cl. 37)
- last date for final payment claim (cl. 42.7).

Where the contract includes 'separable portions' (cl. 35.3), there may be separate dates for these aspects.

12.8.1 The time for giving possession of the site

The principal is required to give to the contractor possession of enough of the site to enable the contractor to start work and execute the contract in accordance with the requirements of the contract (cl. 27.1). The actual date for possession of the site is stated in the Annexure. The latest time for giving possession is stated in the Annexure. Delay in giving possession can entitle the contractor to extra costs and an extension of time. If the delay continues beyond a period stated in the Annexure, the contractor may give the principal a show cause notice (cl. 44.7(d)).

The contractor has a licence to use the site until practical completion is reached, at which point the principal assumes possession of the site. The contractor does not have a lease over the site

and does not have exclusive possession (cl. 27.1). The contractor is responsible for the care of the work under the contract during that period (cl. 16.1). The contractor does not have any right to remain on the site after being directed by the principal to vacate it (*Cherमार Productions Pty Ltd v. Pretest Pty Ltd* [1991] 7 BCL 46). However, the contractor may have a claim against the principal for damages. The contractor has no right to use the site for any purpose other than the carrying out of the work (cl. 27.4).

The contractor must start work on the site within 14 days after the principal has given the contractor possession of enough of the site to enable the contractor to start work. The contractor must also before beginning work on the site give the superintendent seven days' notice in writing of the date on which the contractor proposes to begin work on the site (cl. 35.1).

12.8.2 Practical completion and date for practical completion

Contracts sometimes define practical completion differently, but the definition of practical completion in AS2124 is the most commonly used definition. Under AS2124, cl. 2, practical completion is that stage in the execution of the work under the contract when:

- 1 the works or a separable part of the works are complete except for minor omissions and minor defects
- 2 those tests that are required by the contract to be carried out and passed before the works or the separable part of the works are handed over to the principal have been carried out and passed
- 3 such documents and other information required under the contract which, in the opinion of the superintendent, are essential for the use, operation and maintenance of the works have been supplied.

This is not the complete definition. It is important to note that the contractor has no right to a certificate of practical completion while there is any defect or omission, albeit minor, if the superintendent does not determine that the contractor has reasonable grounds for not promptly rectifying the defect or omission (cl. 2, sub-paragraph (a)(ii) of the definition).

When the contractor is of the opinion that practical completion of the work has been reached, the contractor must in writing request the superintendent to issue a certificate of practical completion for the work. The superintendent then must within 14 days of receiving the request either issue a certificate of practical completion or give reasons for not issuing the certificate (cl. 42.5). Contractors often claim that they have achieved practical

completion when there are minor defects or omissions and they overlook the fact that any minor omission or defect prevents practical completion unless there are reasonable grounds for not promptly rectifying the defect or omission. If there is any omission or defect existing at the time the contractor notifies the superintendent under cl. 42.5 that the contractor is of the opinion that practical completion has been reached, the contractor should inform the superintendent of the reason why the omission or defect cannot be promptly rectified.

When practical completion is reached and certified by the superintendent, the following will ensue:

- 1 The contractor's liability for liquidated damages for being late in achieving practical completion is capped.
- 2 The contractor's liability for the care of the works ends (cl. 16.1) and thereafter the contractor is only liable for loss or damage to the works arising out of faulty design provided by the contractor, workmanship or materials or damage occasioned by the contractor in the course of completing outstanding work or rectifying defective work. It is essential that at practical completion, insurance of the works including Fire Insurance be immediately effected by the principal. Risk passes to the principal at 4 pm on the date of practical completion.
- 3 The principal is entitled to take possession of the site and the works (cl. 35.2). The principal has no right to use or occupy any part of the works before a certificate for practical completion is issued. If part of the works has reached practical completion and the principal wishes to occupy that part, a separable portion must be created with its own date of practical completion (cl. 35.3).
- 4 The defects liability period begins (cl. 31).
- 5 The principal must upon issue of a certificate of practical completion reduce the amount of the security and the retention moneys by the amount stated in the Annexure (cl. 5.7).

12.8.3 Defects liability period

The contract provides for a period known as the defects liability period. This period begins on the date of practical completion and ends on the day on which the defects liability period set forth in the Annexure expires (cl. 37). It is a period in which the contractor has an entitlement to be given the opportunity to remedy defects. Were it not for the defects liability period, the principal could sue the contractor for damages for any defect. The defects liability period is there for the protection of the contractor. Some contractors make the mistake of thinking that they are not liable for defects that are not discovered during the defects liability period. After the expiration of the defects liability period, the contractor still remains liable for defects whenever they may be

discovered. Under statute, there will be a limitation on the time in which a claim may be brought against the builder. In New South Wales this is six years or 12 years in the case of a contract made by deed (*Limitation Act 1969* [NSW]) and, for residential building work, seven years (*Home Building Act 1989* [NSW]).

At any time before the fourteenth day after the expiration of the defects liability period, the superintendent may direct the contractor to rectify any omission or defect in the work under the contract. The direction may provide that in respect of the work of rectification there will be a separate defects liability period of a stated duration not exceeding the period stated in the Annexure. The separate defects liability period will begin on the date the contractor completes the work of rectification.

Sometimes contractors mistakenly think that payment in full should be made upon practical completion. At practical completion the contractor is only entitled to claim the value of work done to that date. Under cl. 42.2, when making payment the principal is entitled to take into account the estimated cost of rectifying any omissions or defects. That cost may well exceed the amount to which the contractor will be entitled upon rectification of the defects or omissions.

The defects liability period also gives the contractor time to finalise claims. Clause 42.7 bars claims that the contractor forgets to make before the expiration of 28 days after the end of the defects liability period. Final release of security and retention moneys is made within 14 days after issue of the final payment certificate (cl. 42.8). There is a separate defects liability period for each 'separable portion'. When there are 'separable portions', there is no additional defects liability period for the whole of the works.

12.8.4 Notification of delays — extension of time

Delays may be caused by the contractor, or by the principal, or by some other means. The last are frequently called 'neutral delays' or 'delays caused by neutral events'. Examples of delays caused by the contractor are:

- financial problems
- poor management
- job-related industrial disputes
- late subcontract letting
- materials-handling delays
- subcontract problems
- poor management of resources.

Examples of delays caused by the principal are:

- unavailability of site
- late instructions
- variation orders
- late approvals
- design changes
- consultant-related problems.

Examples of delays caused by neutral events are:

- weather
- industry-wide strikes
- latent conditions
- acts, regulations
- statutory and other bodies
- suppliers of materials.

When it becomes apparent to the contractor that work may be delayed by any cause, the contractor must promptly notify the superintendent (cl. 35.5, para. 1). This obligation is quite independent of whether the contractor will be claiming an extension of time. The principal has an interest in knowing of possible delays. Failure to warn the principal could give rise to liability for damages. If the contractor is delayed in achieving practical completion by a cause beyond the contractor's control and submits a written claim to the superintendent within 28 days after the delay occurs, the contractor is entitled to an extension of time for practical completion. There are qualifications to this broad principle.

Certain specified causes of delays are listed in cl. 35.5(b). Only these justify an extension of time when they occur after the date for practical completion. For other causes, particularly wet weather and strikes, the contractor is not entitled to an extension if they occur after the due date for practical completion (cl. 35.5).

If the contractor makes a claim and the superintendent considers that the cause of the delay is such as to justify an extension of time for practical completion, the superintendent must within 28 days after receipt of the notice grant the contractor a reasonable extension of time (cl. 35.5). The notice referred to is the notice of the number of days extension claimed. The contractor may give notice of a claim, but at that time the contractor may not know what will be the extent of the delay. The contractor can then give a second notice setting out the number of days extension claimed. The superintendent does not have to make a decision until the contractor has notified the superintendent of the number of days

claimed. If the superintendent rejects the contractor's claim for an extension of time, the superintendent must inform the contractor of the decision and give reasons in writing before the expiration of the 28 days (cl. 35.5).

The last paragraph of cl. 35.5 states that delay by the principal or the failure by the superintendent to grant a reasonable extension of time or to grant an extension of time within 28 days shall not cause the date for practical completion to be set at large. The purpose of this provision is to preserve the principal's right to liquidated damages (cl. 35.5). But the contractor can claim from the principal any damages flowing from the absence of an extension of time. These may be the cost of overtime to make up for the delay or a refund of liquidated damages and interest for the time the money has been held. The contractor can claim compensation on account of a delay for which an extension of time is granted when the Annexure provides compensation (cl. 36). The compensation may be a daily amount that is independent of actual costs. This is a convenient way of avoiding the tedious task of proving the actual extra costs caused by a delay. However, cl. 36 is not widely used. If the delay was due to any breach of the provisions of the contract by or any other act or omission on the part of the principal, the superintendent or the employees, professional consultants or agents of the principal, the contractor may be able to claim damages for breach of contract or extra costs under a specific provision of the contract covering extra costs (e.g. cl. 33.1).

The fourth paragraph of cl. 35.5 covers what is sometimes called the contractor's 'float'. The superintendent cannot take into account the 'float' available in the contractor's program in determining whether the contractor can reach practical completion. The term 'float' is used in several senses, and saying the 'float belongs to the contractor' can be ambiguous. If the contract period is six months starting on 1 January and the contractor could, but for a 30-day delay, finish by 30 April, the delay will not cause the contractor to incur liquidated damages but it will nevertheless delay the contractor in achieving practical completion. Hence the contractor is entitled to an extension of time. The superintendent should extend the date for practical completion from 30 June to 30 July. The period from 30 April to 30 June would be described as the 'contractor's float'. Now assume that the original contract period is as before but that after clearing the site, the contractor will have to wait until 15 February to begin construction because council approval will not be available till then. Assume that the contractor could, but for the delay, have cleared the site by

1 February. Assume that in the course of clearing the site, the contractor is delayed by five days of wet weather but that the wet weather will not delay construction because there is still adequate time to clear the site. The period from 1 to 15 February is also often described as the 'contractor's float'. Nevertheless, the delay on account of wet weather would not entitle the contractor to an extension of time for practical completion because in fact practical completion will still be achieved on the same day irrespective of the wet weather.

Another instance where the term 'contractor's float' is used is where there are two phases of construction proceeding in parallel. For example, under the one contract, the contractor may have to construct two identical water treatment tanks, tank A and tank B. Tank A may be so delayed (by events that do not justify an extension of time) that the contractor cannot achieve practical completion until 30 November. Tank B may be on schedule and due for completion on 30 June. If the contractor is delayed for ten days in constructing tank B, the contractor will still achieve practical completion of the whole contract on 30 November. The delay on tank B will not cause a delay in achieving practical completion. Hence the delay does not entitle the contractor to an extension of time. The delay is often said to be a delay to work which is not on the critical path.

12.9

PAYMENT TO CONTRACTOR

12.9.1 Contract price

The contractor is entitled to be paid the agreed price for the work. Whether that price is reasonable or not is irrelevant. A contractor who tenders a price that is unprofitable is still bound to complete the work for that price. Similarly, if the principal finds that the price which the principal has agreed to pay the contractor is too high, the principal cannot vary the contract to take work out and give it to a contractor whose price is lower. However, in the case of residential building work, there may be a statutory power for a court, on the request of the client, to review and revise the terms of a harsh contract (see Chapter 15). The price for any work will be a lump sum or a rate. It must include the GST.

In the absence of a term in the construction contract providing for progress payments or legislation providing for progress

payments, such as the *Building and Construction Industry Security of Payment Act 1999* (NSW), a contractor is not entitled to claim payment until the work is complete. Where work is substantially complete and the defects do not prevent the client from using the work, the courts may permit the contractor to sue for the lump-sum price and place the onus on the client to demonstrate the loss that the owner incurred because the contractor did not complete the work. This is known as the doctrine of substantial completion. It is a common law doctrine best illustrated by the UK case *Hoening v. Issacs* [1952] 2 All ER 176. Most standard forms of general conditions provide for progress payments. Under AS2124-1986, the obligation to pay the contract price is in cl. 3.1. The contractor's entitlement to progress payments and the time for payment is covered by cl. 42.1.

Contracts almost invariably provide that progress payments are payments on account of the final contract price (e.g. AS2124-1986, cl. 42.1). Should it eventuate that the amount paid by way of progress payments exceeds the contractor's final entitlement, the difference would have to be repaid by the contractor.

12.9.2 Progress claim

A standard form will usually provide for the time when payment claims can be made by the contractor. This is usually at monthly intervals but it can be at stages of the work or on particular dates. AS2124-1986 provides that at the times for payment claims stated in the Annexure and upon issue of a certificate of practical completion and within the time prescribed by cl. 42.7 (final payment claim), the contractor must submit to the superintendent a claim for payment showing the amount claimed by the contractor, supported by evidence of the amount due and such information as the superintendent may reasonably require (cl. 42.1).

The amount that the contractor can claim by way of a progress claim will usually be covered expressly by the general conditions of contract. It is usually the value of work performed to the date of the progress claim. This value may include the value of variations, but some contracts do not provide for the value of variations to be included in a progress claim. The contract may provide that the contractor can include in progress claims amounts claimed for damages. Sometimes a contract will include a clause called a 'cost adjustment' or 'rise and fall' clause. Such clauses commonly provide that the amount of a progress payment will be adjusted up or down depending on movements in a price index. A progress claim may include the amount claimed for cost adjustment (rise and fall).

A progress claim will usually be a tax invoice under the GST legislation. However, that legislation allows a contractor to have an agreement with the principal that the principal will issue the tax invoice instead of the contractor. This is called a 'recipient created tax invoice'. The progress certificate rather than the progress claim becomes the tax invoice. In that instance, GST would not be added to the amount claimed in the progress claim but it would be added to the amount shown as payable in the progress certificate.

Under AS2124-1986, cl. 42.1, claims for payment should include all amounts then due to the contractor. If the contractor fails to claim an amount in a particular progress claim, the contractor can claim it in a later progress claim but cannot claim interest on the amount for the period before it was claimed (see cl. 42.9). Claims should include amounts claimed for work performed, amounts due to nominated subcontractors (even though those amounts may be paid by the principal directly to the nominated subcontractor; see cl. 10.6), variations performed, damages (including prolongation costs), and amounts claimed under any other provision of the contract. Allowance should be made for retention moneys (see cl. 42.3) and amounts previously received. The value of imported or unfixed items may be able to be claimed (see cl. 42.4). An example of a progress claim is shown in the Table 12.1.

TABLE 12.1**A PROGRESS CLAIM**(TO THE PRINCIPAL)¹**TAX INVOICE²**

(Reference: Contract number, name of project or description of the work)

Progress Claim no. 3

Progress payment due at 31 March 2002 to:

(Name and address of contractor

Contractor's Australian Business Number)

Value at 31 March 2002 of work under the Contract carried out at ... ³	\$50 000
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This amount includes:

Establishment, clearing site and excavation	\$35 000	
Unfixed materials listed in schedule attached	\$5000 ⁴	
Value of work by nominated subcontractor	\$5000 ⁵	
Variation no. 1	\$2000 ⁶	
Cost adjustment (rise and fall) on previous payments	\$2000 ⁷	
Interest on late payment of progress claim no. 1	\$1000 ⁸	
Plus cost adjustment on the value of work this month	\$1000	\$51 000
Less		
Previous progress payments (excluding GST) ⁹		
Progress payment no. 1	\$5000	
Progress payment no. 2	\$9000	
Estimated cost of removing defective tiles	\$1000 ¹⁰	
Total deductions		\$15 000
Total of this progress claim before deducting retention		\$36 000
Deduct retention 10% ¹¹		\$3600
Progress payment claimed (before adding GST)		\$32 400
GST 10% ¹²		\$3240
Total amount of this progress claim		\$35 640

This is a payment claim under the Building and Construction Industry Security of Payment Act 1999 NSW¹³

Signed for contractor by

Footnotes to Table 12.1

- 1 Although the contract usually provides that a progress claim should be served on the superintendent, the claim should be addressed to the principal. It is the principal, not the superintendent, who is being invoiced.
- 2 If there is an agreement (in the form prescribed under the GST tax legislation) between the contractor and the principal that the contractor will not issue tax invoices and the principal will issue recipient created tax invoices, then the title 'Tax Invoice' should not be included in the progress claim and GST should not be added at the end.
- 3 A separate schedule or schedules might be included to explain how the value has been calculated. What can be claimed as the value of work depends on the terms of the construction contract. For example, PC-1 1998 in cl. 12.7 refers to 'the value of work completed in accordance with the Contract'. This would include the value of variations. On the other hand, Davenport (2000: 147) suggests an amendment to AS2124-1986 that would allow progress claims to include amounts on account of a variation only where the value of the variation has been finally determined.
- 4 Unfixed materials, although delivered to site, do not necessarily belong to the principal. Construction contracts commonly provide that until the unfixed materials are incorporated in the works, the contractor is only entitled to an amount on account of the value of unfixed materials if the contractor provides additional security (e.g. a bank guarantee) equal to the amount claimed for the unfixed materials.
- 5 The work by nominated subcontractors has to be separately valued. If payment is to be made directly to a nominated subcontractor, the contractor must indicate the amount to be paid directly.
- 6 What is claimed in a progress claim is an amount on account of the work comprised in a variation. This is not a final price for the variation. The final price of the variation does not have to be agreed before an amount can be claimed on account.
- 7 There are many different cost adjustment clauses. One of the best known is the National Cost Adjustment Provision, 2nd edition, NCAP 2. It provides that the value of work carried out in the month covered by the progress claim will be increased or decreased by an amount calculated from a formula that uses price indexes. For present purposes, it is assumed that the cost adjustment clause is NCAP2. The reason why the previous amounts of cost adjustment are included here is that, later, previous progress payments (which will include cost adjustment) are deducted.
- 8 If a previous progress claim was not paid on time, the contractor (at least under AS2124) can claim interest. By including unpaid interest in progress claims, the contractor can, in effect, obtain compound interest if the amount of unpaid interest is not paid in the subsequent progress payment.
- 9 Where a contract provides for retention moneys, the amount of previous progress payments could be the net amount after deduction of retention moneys or the amount before deduction of retention moneys. Under AS2124-1986, it is the latter, but in the case of any other contract, the terms of the contract may be different. The reason for excluding GST is that if progress payments plus GST were deducted then GST would have to be added to the value of work under the contract. The more common practice is to use GST-free valuations for calculations and then add GST at the time of invoicing.
- 10 Most contracts provide for deduction of the estimated cost of remedying a defect. The calculation of a deduction is explained below.
- 11 Most contracts which provide for retention moneys provide that retention is to be deducted from the net amount of the progress payment before GST is added.
- 12 The calculations have been made using GST-free values but, depending on the terms of the construction contract, values could include GST, in which event this last addition of GST would not be made but the GST component of the final amount would still be separately identified.
- 13 The endorsement referring to this Act is only required where the contractor wants to invoke the provisions of the NSW Act. The Act only applies with respect to construction work in New South Wales or related goods or services provided in relation to construction work in New South Wales. Without this endorsement, the progress claim is not a payment claim under the Act.

12.9.3 Payment certificate

Under a construction contract, there is usually a prescribed time for the superintendent to issue a progress certificate. For construction work in New South Wales, the *Building and Construction Industry Security of Payment Act 1999* requires the principal to serve on the contractor, within ten business days after receipt of the progress claim, a payment schedule setting out the amount, if any, which the principal proposes to pay and the reasons for not paying any amount claimed. Under that Act, if a payment schedule is not served within time, the full amount claimed in the progress claim is payable. The ordinary superintendent's payment certificate usually does not fulfil the requirements of the Act (Davenport 2000). Under AS2124-1986, the superintendent must within 14 days after the receipt of a claim issue a payment certificate (cl. 42.1) to the contractor and to the principal showing the superintendent's opinion of the amount due to the contractor. The certificate is no more than an opinion. In the certificate, the superintendent should deduct any amount then due from the contractor to the principal for liquidated damages. The certificate should cover:

- the value of work executed
- the amount of any adjustments (e.g. variations)
- the amount payable to nominated subcontractors
- liquidated damages due
- the estimated cost of rectifying defective work
- the total amount of progress payments previously made
- cost adjustment (rise and fall)
- the amount of retention moneys
- GST
- the amount that should be paid to the contractor
- the reasons why any amount claimed should not be paid.

If the contractor does not submit a claim, the superintendent may (but is not bound to) issue a payment certificate to the contractor (cl. 42.1). It is important that retention moneys are deducted only after the other amounts to be deducted have been deducted. For example, assume that a building would have a value of \$100 000 at bill of quantity rates were it constructed in accordance with the specification, but that one item, valued at bill rates at \$10 000, is defective. Assume that the defective work will cost an estimated \$5000 to remove and then it will have to be rebuilt. Assume that retention moneys are 10 per cent. The value of the work would then be \$90 000. Nothing should be included

for the work which is not in accordance with the specification. The estimated cost of rectifying the defect (\$5000) should be deducted. From the resulting \$85 000, retention of \$8500 should be deducted. The progress payment would thus be \$76 500.

AS2124-1986 differs from most forms of contract in that it does not say that the amount payable to the contractor is the amount in the certificate. Clause 42.2 states that the amount due to the contractor is the 'value of work carried out by the contractor in performance of the contract' with certain adjustments. If the contractor can show that the contractor claimed more than the amount paid and that the amount claimed was the true value of the work, then the contractor should succeed in a claim for the difference plus interest. Unlike most forms of contract, the principal cannot hide behind the certificate of the superintendent (Davenport 1989b).

In AS2124-1992 cl. 42 has been substantially amended. Under that contract the amount certified by the superintendent is the amount payable, even if the certificate is for more or less than the true value. If the construction work is being carried out in New South Wales, then regard must be had to the *Building and Construction Industry Security of Payment Act 1999*. At the time of writing there is no similar legislation in other States. The Act and its implications are canvassed in Davenport (2000). The provisions of the Act (other than the barring of 'pay when paid' clauses) are only invoked if the person claiming payment for work, goods or services endorses on a payment claim a statement that the claim is made under the Act. In respect of New South Wales construction contracts let after 25 March 2001, any clause that provides that the contractor is only required to pay the subcontractor amounts equal to the amounts paid by the principal to the contractor (a 'pay if paid' clause) or to pay the subcontractor when the contractor has been paid by the principal (a 'pay when paid' clause) is void (s.12 of the *Building and Construction Industry Security of Payment Act 1999* (NSW)).

12.9.4 Progress payments

Contracts usually expressly provide a maximum period for payment of a progress claim. In New South Wales, if no express provision is made in the construction contract, the period is two weeks after the progress claim is served on the party liable to pay (s. 11 of the *Building and Construction Industry Security of Payment Act 1999*). Under AS2124-1986, the payment to the contractor must be made within 28 days after receipt by the superintendent of a

claim for payment or within 14 days of the issue by the superintendent of the superintendent's payment certificate, whichever is the earlier (cl. 42.1).

In the absence of a power in the contract or enabling legislation, a principal cannot pay workers or subcontractors directly out of moneys due to the contractor. AS2124-1986 (cl. 43) provides that if any worker or subcontractor employed on the work under the contract remains unpaid, then, subject to production by the worker or subcontractor of a court order, the principal may pay the amount due to the worker or subcontractor and the principal may deduct the amount so paid from moneys due to the contractor. There may also be legislation (e.g. s.127 of the *Industrial Relations Act 1996* [NSW]) that makes the principal directly liable for payment of unpaid workers, and legislation that allows a subcontractor to attach (freeze by court order) amounts (due or becoming due to the contractor) in the hands of the principal so that those amounts can be garnisheed by the subcontractor. A garnishee is a court order that the principal pay the subcontractor directly out of moneys in the hands of the principal due to the contractor (e.g. *Contractors Debts Act 1997* [NSW]).

12.9.5 Final payment claim

The discussion so far has concentrated on progress payments. They are payments made only on account of the final amount to be claimed. Contracts usually provide a time within which the contractor must make a final claim. Under AS2124, the contractor is required to submit a final payment claim of all the contractor's claims against the principal, whether under the contract or arising out of the contract or any alleged breach thereof, within 28 days after the expiration of the defects liability period (cl. 42.5). The contractor's final claim would commonly show in detail all adjustments to the contract price and the amount claimed by way of release of retention moneys or security. If the contractor has been making progress claims, a final claim need be no different in format than a progress claim except for the addition of the word 'final claim'. A final claim can be a payment claim within the meaning of the *Building and Construction Industry Security of Payment Act 1999* (NSW).

12.9.6 Final payment certificate

Although the law does not require a final certificate, many contracts provide for the superintendent to issue a final certificate. A final certificate, if required, is the creation of the contract and has

the purpose and effect provided by the contract. Under AS2124-1986, within 14 days after receipt of the contractor's final payment claim the superintendent is required to issue to the contractor and to the principal a final payment certificate (cl. 42.8). The final payment certificate would normally state:

- the items mentioned above for a progress certificate
- the amount of retention or security to be released
- the final balance payable to the contractor or to the principal, as the case may be.

If the contractor is dissatisfied with the amount of a payment, the contractor would give notice of a dispute under cl. 46. Unlike some forms of contract, AS2124 does not provide that the final payment certificate is evidence that the work has been completed in accordance with the terms of the contract to the reasonable satisfaction of the superintendent. The final payment certificate does not have any finality.

On the other hand, AS2124-1992, cl. 42.8 gives the final certificate finality. That creates unnecessary risk for the superintendent and the principal. There are a number of cases where the contractor has escaped liability because a final certificate has been issued. Sometimes the principal has recovered damages from the person who issued the final certificate. The introduction of the finality of the final certificate is an example of the change of risk allocation made by AS2124-1992 and the reason why many owners and their advisers have decided to stay with AS2124-1986 in preference to AS2124-1992. Standard forms drafted by organisations representing the interests of contractors usually provide for a final certificate that will have the effect of finally releasing the contractor from liability, whereas standard forms drafted by organisations representing principals or consultants usually have no provision for a final certificate or, like AS2124-1986, don't make the final certificate a release of liability.

12.10

ADJUSTMENT OF CONTRACT SUM

12.10.1 Recovery of prolongation costs

To have a right to recover the extra costs (prolongation costs) incurred as a consequence of delay, the contractor must be able to point to a provision of the contract by which the principal has agreed to pay those costs, or to a breach of contract that caused

the contractor to incur the extra costs. The first is a claim under the contract. The second is a claim for breach of contract.

When cl. 36 of AS2124-1986 is used, the contractor is entitled to recover from the principal compensation for the delay in the progress of the works (which led to the extended time of the contract) provided the cause of delay is one for which the Annexure provides compensation. When cl. 36 applies, the amount of compensation under the contract is the limit of the principal's liability in respect of the delay. However, cl. 36 is very seldom used and when it is used, it is usually amended so that it sets liquidated damages payable by the principal for delay caused by a breach of contract by the principal.

As well as cl. 36, cl. 8.1 (discrepancies in the contract documents), cl. 12 (latent conditions), cl. 14.2 (changes in the law), cl. 33.1 (directions as to the order of work) and cl. 40.1 (variations) can provide recompense under the contract where the contractor incurs prolongation costs. In each case the recompense is valued under cl. 40.2 and does not include profit or loss of profit incurred by delay or disruption (see cl. 40.2(f)).

Sometimes contractors make the mistake of failing to include in a quotation for a variation the prolongation costs incurred as a consequence of the variation. Those contractors then try to make a separate claim for the prolongation costs. But the principal's liability is to pay for the variation and there is not a separate liability to pay prolongation costs. If the liability to pay for the variation has been extinguished because the principal has paid the agreed amount for the variation, the contractor cannot reopen the matter and claim an additional amount for the variation.

When the principal breaches the contract, the liability of the principal is quantified at common law and cl. 40.2 does not apply to quantification. There can therefore be two different measures of the contractor's entitlement to prolongation costs depending on the source of liability, namely under the contract or for breach of contract. Liability can also arise independently of the contract. It can arise in tort (e.g. negligent misrepresentation) or by statute (e.g. under the *Trade Practices Act 1974* or the *Fair Trading Act 1987* [NSW]). The method of measurement of the contractor's entitlement in tort or by statute is different again from that under the contract or for breach of contract.

12.10.2 Liquidated damages

If a contractor breaches the contract by not bringing the work to practical completion by the date for practical completion, the

contractor is in breach of contract and liable to pay the principal such damages as the principal suffers from the breach. The starting point in calculating the damages is the case of *Robinson v. Harman* [1848] 1 Exch 850 where Baron Parke formulated the classic statement: 'Where a party sustains a loss by reason of a breach of contract, he is, so far as money can do it, to be placed in the same situation, with respect to damages, as if the contract had been performed'.

Applying that to damages for delay in handing over the work practically completed, the principal may, but for the contractor's failure, have received rents from tenants of the works. The amount of the rents lost would be the damages for delay. Usually the contractor would like to know just how much the contractor will have to pay if late and the contractor would like to put a ceiling on the contractor's liability for delay.

The law permits the parties to agree ahead of time on the amount of the damages for delay. If they agree on an amount, then the damages are said to be 'liquidated damages'. The agreed amount is the ceiling on the contractor's liability but it also saves the principal the task of proving actual loss. The agreed amount is binding even though the delay causes no actual loss to the principal.

An objection often made to the principle of liquidated damages is that there is no logical basis on which they can be assessed at the date of the contract. That is no basis for challenging the validity of the agreement with respect to liquidated damages. They are not the actual damages that the delay will cause. The parties are at liberty to agree on an amount that is more or less than what will be the actual damages. The agreed (liquidated) damages must not be outrageous or extravagant having regard to the greatest possible damage that is foreseeable at the time the contract is made.

Liquidated damages are a recompense for loss and not a penalty. Any provision in a contract purporting to impose a penalty on one party or the other for breach cannot be enforced and is said to be 'void'. Liquidated damages are sums that have been agreed by the parties as the damages to be paid. It is only if it can be shown that the agreement is not as to damages but as to a penalty that the courts will declare the agreement void. Although contractors frequently assert that the principal cannot impose liquidated damages because they are a penalty, there are very few cases where the argument has succeeded when the liquidated damages are a daily or weekly amount.

There is no reported case in England or Australia where liquidated damages of an amount per day or week of delay in a construction contract have been held to be a penalty. Bearing in mind the number of construction contracts that include liquidated damages for delay and the number of delays, this indicates that a contractor is most unlikely to avoid a liquidated damages clause by raising the penalty argument. In the absence of liquidated damages, general damages apply. Liquidated damages are dependent on there being a date for practical completion. If there is no date for practical completion, there is no date from which to calculate liquidated damages and the liquidated damages provision ceases to have any application.

When the principal has in fact suffered no damages as a consequence of the contractor's delay, or the damages are smaller than the amount that is the total of liquidated damages, contractors sometimes argue that they are not liable for liquidated damages for a number of reasons. One is alleged 'prevention' by the principal (Davenport 1991b). The amount of liquidated damages is pre-ascertained and appears in the Annexure. The liability for liquidated damages ends on practical completion (cl. 35.6). The contractor's liability for liquidated damages is limited to the amount if any stated in the Annexure (cl. 35.7).

12.10.3 Bonus

Contracts rarely provide an incentive to the contractor to achieve practical completion early. Under AS2124-1986, cl. 35.8, if the contractor achieves practical completion earlier than the date for practical completion, there is a provision for a bonus to be paid for each day that date is earlier than the due date. The total of the bonus will not exceed the limit stated in the Annexure. There is a common misconception that the amount per day for a bonus must be equal to the amount per day for liquidated damages. There is no reason for any similarity in amounts. The bonus provision is optional and, in practice, rarely used.

12.10.4 Variations

The term 'variation' is sometimes used incorrectly to describe a direction by the superintendent (e.g. under cl. 33.1 of AS2124) with respect to the order of work or a change in the amount payable under the contract for any reason, even rise and fall. It is also incorrectly used to describe an agreed change to the terms of the contract. The term should only be used to describe a change in the work directed by the superintendent.

Variations are directed (or approved) by the superintendent giving a written or oral notice to the contractor to do one or more of the following things (cl. 40.1):

- 1 increase, decrease or omit any part of the work under the contract
- 2 change the character or quality of any material or work
- 3 change the levels, lines, positions or dimensions of any part of the work under the contract
- 4 demolish or remove material or work no longer required by the principal.

The contractor is bound only to execute a variation that is within the general scope of the contract (cl. 40.1). The superintendent should not direct work that is so radically different from the work originally specified that it cannot be said to be within the general scope of the contract. However, if the superintendent does so and the contractor carries out the variation, then the principal must nevertheless pay the value ascertained under cl. 40.2.

The contractor is not bound to execute a variation directed after practical completion unless the variation is in respect of rectification work performed during the defects liability period (cl. 40.1). There is a provision enabling the superintendent to approve a variation requested by the contractor for the contractor's own convenience. Without such a provision, only the principal could waive compliance with the requirements of the specification and drawings where the only reason for the waiver is to assist the contractor to overcome a problem that is the contractor's responsibility (cl. 40.1).

It is only when a variation is requested by the contractor for the contractor's own convenience that the superintendent can impose conditions, for example that the variation must be at no cost to the principal or that there will be no extension of time for the variation.

When a contractor seeks approval to vary the work, it is important to consider who will be responsible for suitability for purpose of the varied work. For example, if the contractor asks if the contractor can substitute product B for product A, who is responsible to ensure that product B is readily available and will be suitable in all respects for use in the works? Before approving the change, the superintendent might ask the contractor to give an undertaking in writing that product B will be suitable in all respects for use in the works and that the substitution will not cause any delay or extra costs and will have no implications for any other work.

The contractor is not required to give a price for the variation

before carrying it out. Hence if the carrying out of the variation delays other work, the costs associated with it can be included in the costs claimed for the variation. Where a variation is essential but the superintendent refuses to approve it, refer to Davenport & Harris (1997).

12.10.5 Valuation of adjustments

There are a number of provisions in AS2124 entitling the contractor to extra payment, for example:

- errors in quantities in the bill of quantities
- discrepancies in contract documents
- changes in the law
- latent conditions
- finding of fossils
- errors in setting out the works
- extra tests
- change in order of work
- suspension
- variations.

In each instance the appropriate provision of the general conditions provides that the adjustment will be valued under cl. 40.2.

A variation to the work never affects the contract sum (as defined in cl. 2) but it will often affect the contract price, although not necessarily, and it may also affect the contract time. It is most important that the superintendent properly considers both these aspects when a variation is contemplated. Preferably an agreement should be reached with the contractor on both aspects and the matter be properly documented, if possible before the variation is ordered. The variation may be quoted:

- 1 as a firm price:
 - not subject to cost adjustment
 - subject to cost adjustment from the date of quoting
 - subject to cost adjustment in accordance with the rise and fall conditions governing the original contract.
- 2 as a rate
- 3 as cost-plus.

If, due to a variation order being placed, the contract value is significantly increased, the value of the insurance of the works could well need to be increased beyond its original value. The cost of the additional insurance would be part of the cost of the

variation. Clause 40.2 provides the method of calculating the adjustment. Clause 30.3 provides differently for valuation when the variation is directed to overcome the effect of defective work. Clause 40.2 is notable in two respects:

- 1 Where work is deducted, a reasonable amount is deducted for profit and overheads related thereto.
- 2 Where the valuation relates to delay or disruption, the valuation includes a reasonable amount for overheads but does not include profit or loss of profit.

The value of the variation will be determined as per cl. 40.2 according to:

- specific rates or prices prescribed in the contract, or
- the rates or prices in a priced bill of quantities or schedule of rates, or
- reasonable rates or prices.

Examples of valuation are as follows:

For additions

Value of additional work at cost (\$1200) + say 10 per cent for overheads and profit, for example:

$$1200 + 120 = \$1320$$

For deductions

Value of omitted work at bill rates (\$800) less say 5 per cent for overheads and profit, for example:

$$800 - 40 = \$760$$

Clause 40.2(d) provides that the deduction will include a reasonable amount for profit and overheads. If the bill rate (\$800) includes 10 per cent for overheads and profit, it might in a particular instance be reasonable to only deduct 5 per cent. However, where the bill rate does not include any overheads and profit and these are measured separately in the bill, it might be reasonable to make the value of the variation \$840.

Before a variation is carried out, the superintendent may direct that it be carried out as 'daywork' (cl. 41). This is not a different type of work but merely means that the contractor must provide the information in cl. 41 to establish the amount to be paid for the work. Valuation of a variation in accordance with 'daywork' is given in Table 12.2.

TABLE 12.2

THE VALUATION OF A VARIATION IN ACCORDANCE WITH 'DAYWORK'

	VARIATION COST
Labour costs	\$340.00
Statutory charges	50.00
Cost of hire plant	135.00
Subcontract costs	785.00
Material costs	650.00
Total cost	1960.00
Overhead/profit say 8%	156.80
Total Variation (addition)	\$2116.80

12.11

CONTRACT INSURANCE

The contractor must indemnify the principal against:

- 1 loss of or damage to property of the principal
- 2 claims by any person against the principal in respect of personal injury or death or loss of or damage to any property arising out of or as a consequence of the carrying out by the contractor of the work under the contract. The contractor's liability to indemnify the principal is reduced proportionally to the extent that the act or omission of the principal may have contributed to the loss, damage, death or injury (cl. 17.1).

From the start of the contract to the date of practical completion of the works, the contractor is solely liable for the care of the works, the temporary works and all materials, construction plant and other things that are brought on to the site by or on behalf of the contractor or any subcontractors for the purpose of carrying out the work under the contract or that are entrusted to the contractor by the principal for that purpose (cl. 16.1). It follows that the contractor is required to make good any loss of or damage to the works and other items stated above except for the risks defined under 'excepted risks' in cl. 16.3 as:

- 1 any negligent act or omission of the principal, superintendent or the employees, professional consultants or agents of the principal
- 2 any risk specifically excepted in the contract
- 3 war, invasion, act of foreign enemies, hostilities, civil war, rebellion,

- revolution, insurrection or military or usurped power, martial law or confiscation by order of any government or public authority
- 4 ionising radiations or contamination by radioactivity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel not caused by the contractor or his employees or agents or subcontractors
- 5 use or occupation by the principal or the employees or agents of the principal or other contractors to the principal of any part of the works or the temporary works
- 6 defects in the design of the work under the contract other than a design provided by the contractor.

12.11.1 Insurance of the works

It is of the utmost importance that the contract works are insured against loss or damage. Generally speaking, in the absence of insurance, if before they are handed over to the principal the works are damaged by flood, fire or vandalism, it would be the contractor's obligation to complete the works and make good the damage. In Alternative 1 of cl. 18 of AS2124, the contractor must take out an insurance policy to cover loss of or damage to the works and other associated items. The insurance must be in the joint names of the contractor and the principal, and must cover all subcontractors. The policy must be maintained until the contractor's liabilities and obligations stated in cl. 16.1 cease. The insurance cover may exclude items stated in cl. 17 as:

- 1 the cost of making good fair wear and tear or gradual deterioration but not the loss or damage resulting therefrom
- 2 the cost of making good faulty design, workmanship and materials but not the loss or damage resulting therefrom
- 3 consequential loss of any kind, but not loss of or damage to the works
- 4 damages for delay on completing or for the failure to complete work
- 5 loss or damage resulting from ionising radiations or contamination by radioactivity from any nuclear fuel or waste
- 6 loss of damage resulting from the excepted risks (ii) and (iii) in cl. 16.3.

Unless otherwise specified elsewhere in the contract, the insurance cover must be for an amount not less than the contract sum, to which must be added a further sum not less than the total of the respective amounts stated in the Annexure for the value of materials to be supplied by the principal, and the assessments for insurance purposes of architects', engineers' and surveyors' fees and of costs of demolition and removal of debris relating to and necessarily incurred in the reinstatement of loss or damage to the works (cl. 18). When practical completion is

reached and the principal takes possession of the works, the principal must effect such insurance of the works as the principal requires. Risk passes at 4 pm on the date of practical completion. In 'Alternative 2' of cl. 18 there is an option for the principal to effect a policy of insurance, maintain it while ever the contractor has an interest in it and pay all premiums.

In AS2124 an alternative provision (Alternative 2 of cl. 18) is included to cover 'principal-controlled insurance'. This is the term given to the practice of some principals of effecting insurance of the works and public liability insurance on behalf of the principal and the contractor before work begins or the contract is let.

12.11.2 Public liability insurance

In Alternative 1 of cl. 19 of AS2124, the contractor must take out a 'Public Liability Policy of Insurance' in the joint names of the principal, the contractor and all subcontractors employed in relation to the works to cover their liabilities to third parties. The insurance covers liability to the public in respect of injury to or death arising by accident of any person and in respect of any injury, loss or damage arising by accident to any property real or personal including property belonging to the principal (other than the works). The insurance must be for an amount not less than the sum stated in the Annexure. The insurance must be in force during the currency of the contract (until the issue of the final payment certificate).

In the majority of construction contracts, it is the contractor's obligation to effect public liability insurance. Sometimes, however, it is the other way round. For example, under Alternative 2 of cl. 19 of AS2124, the principal must effect a policy of insurance, maintain the policy while ever the contractor has an interest in it, and pay all premiums. This is called 'principal-controlled insurance'.

12.11.3 Insurance of employees (workers' compensation insurance)

Under statute law, reinforced by a specific provision to be found in all standard forms of construction contract, the contractor, as an employer of labour, must provide 'workers' compensation insurance' for the contractor's employees. While the contractor will not take out the insurance to cover subcontractors, the contractor must ensure that every subcontractor has workers' compensation insurance. If a contractor does not have workers' compensation insurance, the principal may be statutorily liable directly to the workers for payment of compensation.

12.12

DEFECTIVE WORK

If the superintendent discovers defective work, the superintendent can (cl. 30.2):

- 1 reject the work and direct its correction
- 2 order a variation
- 3 accept the work in its defective state.

In the case of 2 or 3, there is provision in the contract for adjustment of the contract price (cl. 30.3 and cl. 30.4). The superintendent must make a decision as soon as practicable after becoming aware of the defect (cl. 30.5).

Normally, on becoming aware of the defective work, the superintendent would ask the contractor how the contractor proposes to rectify the defect. The superintendent is under no obligation to tell the contractor how to rectify the defective work and should be careful not to assist the contractor without prior approval of the principal. The principal engages the superintendent to look after the principal's interests, not to help the contractor. Defective work is considered in detail in Chapter 14.

12.13

TERMINATION OF CONTRACT

12.13.1 Default by contractor

In the absence of a specific provision covering termination for default, a party can terminate a contract at common law for a repudiatory breach by the other party. A repudiatory breach is a breach of contract that is so serious that it shows the intention of the defaulting party not to perform the bargain. Sometimes the existence of a specific contractual provision for termination excludes the common law right and provides the only means of termination for default. AS2124 preserves the common law right while also incorporating a specific right of termination for default (see cl. 44.1).

Under AS2124, if the contractor commits a substantial breach of contract and the principal considers that damages may not be adequate remedy, the principal may give the contractor a written notice to show cause. Substantial breaches include but are not limited to:

- suspension of work, in breach of cl. 33.1
- failing to proceed with due expedition and without delay, in breach of cl. 33.1
- failing to use the materials or standards of workmanship required by the contract, in breach of cl. 30.1
- failing to comply with a direction of the superintendent under cl. 30.2, in breach of cl. 23.

If the contractor fails within the period specified in the notice to show reasonable cause, the principal may (cl. 44.4):

- take over the whole or any part of the work remaining to be completed
- terminate the contract.

It is important to note that the principal has no right to take over work or terminate the contract if the contractor shows reasonable cause why the principal should not do so. 'Reasonable cause' is an objective test not a subjective test. If the principal elects to take over the work, the principal must complete that work. To facilitate completion of the work, the principal may, without payment of compensation, take possession of construction plant owned by the contractor. Until completion of the work, the contractor has no right to any compensation or allowance for any action taken by the principal under cl. 44.5 other than a right to require the principal to maintain the construction plant in good working order. On completion of the work, all plant and the surplus materials and other things so taken possession of will be handed over to the contractor. On completion of the work, the superintendent must ascertain the cost incurred by the principal in completing the work and must issue a certificate certifying the amount.

Should the amount so certified be greater than the amount that would have been paid to the contractor if the whole of the work had been completed by the contractor, the difference between the two amounts is a debt due from the contractor to the principal. If the contractor is indebted to the principal, the principal may retain construction plant until the debt is met and, if necessary, sell the plant to meet the debt (cl. 44.6). If the cost incurred by the principal is less than the amount that would have been paid to the contractor if the contractor had completed the work, the difference is a debt due to the contractor from the principal.

There are serious practical problems that can arise if the principal exercises the right of taking over the work. The principal is not entitled to recover loss by way of damages from the contractor until the work is completed. If the principal takes over the work, the principal is then contractually bound to complete the

work. It may even be possible for the contractor to have a claim for damages being the payment the contractor would have received if the principal had completed the work and had done so within a reasonable time.

If the principal elects to terminate the contract, the principal must issue a notice of termination in writing to the contractor. The contract is terminated from the date of the notice. The principal can then recover damages. (See also Chapter 17, section 17.12.)

12.13.2 Default by principal

The contractor may give the principal a written notice to show cause if the principal commits a substantial breach of contract and the contractor considers that damages may not be adequate remedy. Substantial breaches include but are not limited to:

- 1 failure to make a payment, breach of cl. 41.2
- 2 failure by the superintendent to issue a certificate of practical completion, in breach of cl. 42.5
- 3 failure to produce evidence of insurance, in breach of cl. 21.1
- 4 failure to give the contractor possession of enough of the site, in breach of cl. 27.1, but only if the failure continues for longer than the period stated in the Annexure.

If the principal fails to show reasonable cause, the contractor may by notice in writing to the principal suspend the work under the contract. If the principal fails to remedy the breach within 28 days after the date of suspension, the contractor may by notice in writing to the principal terminate the contract. The contractor is entitled to recover from the principal any damages flowing from the suspension or the termination (cl. 44.9).

12.14

DISPUTES

Under AS2124, if a dispute between the contractor and the principal arises, the parties must furnish in writing to the superintendent details of their claims and the reasons for rejecting the other party's claim, and should request the superintendent to make a decision (cl. 46.1). The superintendent must then within 28 days after receipt of the claims give each party a written decision on the dispute (cl. 46.1). Most standard forms of construction contract have a similar dispute resolution procedure. Some require the parties to attempt mediation.

If either party is dissatisfied with the decision of the superintendent, the dispute may be referred to arbitration (cl. 46.2). Arbitration is the reference of a particular matter in dispute to the decision of one or more persons. If the parties cannot agree on an arbitrator, then:

- either party may request the person specified in the Annexure to nominate a single arbitrator
- if a person is not specified in the Annexure, the chairperson of the Chapter of the Institute of Arbitrators Australia in the State or Territory can nominate an arbitrator.

If these mechanisms fail, the Supreme Court can appoint an arbitrator. An arbitrator must not be an employee of the principal or the contractor, a person who has been connected with the work under the contract, or a person in respect of whom there has been a failure to agree by the principal and the contractor. In some States (e.g. New South Wales, Victoria and Queensland), there cannot be a valid arbitration clause in a contract with an owner for residential building work (see Chapter 15).

In New South Wales, arbitration procedures are controlled by the *Commercial Arbitration Act 1984*. Each State and Territory has similar legislation. The claimant can institute proceedings in a court instead of going to arbitration. However, the other party can apply to the Supreme Court for an order staying (freezing) the court proceedings until the arbitration is complete, at which time the court proceedings would almost certainly be dismissed because, by then, the issues will have been finally decided by the arbitrator.

Clause 46.1 provides a mechanism for an independent expert appraisal of claims. It is not generally appreciated that cl. 46.1 allows the appointment of a second superintendent to consider a particular dispute or all disputes. There is little point in referring a dispute to the same superintendent who, on behalf of the principal, has already made a decision to reject the claim. The contractor can always propose to the principal that for the purposes of cl. 46.1 and any particular claim, the principal should appoint an independent person to make the decision. The contractor might even suggest sharing the costs of the independent person. Having a decision (albeit not binding) of an independent third party often results in settlement, though not necessarily at the figure decided by the independent person.

Some principals fail to see the difference between an arbitrator and an expert and they delete cl. 46.2 and provide that disputes

will be submitted to an expert who will make a final and binding decision 'as an expert and not as an arbitrator'. The fact that a contract calls a person an expert and not an arbitrator does not determine whether the person is an arbitrator or not. Contract disputes and dispute resolution are covered in more detail in Chapters 17 and 18.

A GUIDE TO THE SELECTION AND PREPARATION OF CONTRACTS

13.1

INTRODUCTION

Where a project manager is appointed, the project manager has an obligation to the principal to advise on the selection and preparation of conditions of contracts between the principal and the contractor or construction manager. This obligation may extend to setting up the framework of contractual and management relationships between all project participants.

The primary obligation is to protect the principal from risks associated with a particular conditions of contract or alternatively to advise the principal as to the potential risks and how those risks can be carried by the contractor or principal or shared by both.

The project manager must be careful not to stray into fields in which the project manager does not have expertise. The project manager should not take on the role of giving legal advice or drafting the conditions of contract. The project manager should, however, be expected to know the different types of delivery methods that are available and the main advantages and disadvantages of each.

TYPES OF CONTRACT

First, the project manager must consider the project manager's own conditions of contract with the principal. The project manager must comply with the terms of that contract. Assuming that the conditions of contract require the project manager to give advice on the most appropriate methods of project delivery, then the project manager should consider whether the project is one in which the principal should retain an architect, engineer, solicitor or other professionals to assist in advising the principal. It may be that the project manager's contract gives the project manager authority to engage such professionals.

Design will be an early priority. It may be that the principal would prefer a D&C method of project delivery so that the principal has only one contractor to deal with. The project manager should consider the benefits and detriments of such a method of delivery. If the principal's main concern is a fixed lump-sum price and completion in a fixed time, the D&C delivery method should not be overlooked.

On the other hand, if design is the principal's first priority, the principal may be best advised to retain a design consultant and to have the project fully designed before calling tenders. It is most important to elicit the principal's priorities.

The three aspects of a project — design, management and construction — can be given to one contractor or be split up. If the project is large, the principal may be best advised to engage a construction manager under an agency arrangement and to have the construction manager let separate packages (trade packages). The construction manager could be asked to tender for the design work or to let, as agent for the principal, contracts to consultants for the design work. Alternatively, the principal may prefer to engage the design consultants directly.

If the nature or quantity of work cannot be defined with precision, it may be impossible to have a lump-sum contract. For example, in a 'fast-track' project a lump sum will not be effective. There cannot be a binding lump-sum price for a completely undefined quantity of work.

The project manager should be familiar with the advantages and disadvantages of various types of project delivery methods, which include various combinations of design, management and construction. At the same time as consideration is given to the

most efficient way of allocating design, construction and management functions, the principal's budget must be considered. There is no point in recommending a method of project delivery that will not suit the financial constraints of the principal.

Some larger institutional principals who wish to maintain a degree of control over the design and the design team but also to have the contractor acting as a construction manager, assuming most of the project risk, may 'novate' the design team to the contractor (see Chapter 6; Davenport [1993b] identifies problems with novation). This arrangement works as follows:

- The principal selects and appoints the design team on condition that they will subsequently become subcontractors to the contractor.
- The design team works the design up to the stage where there is enough documentation to call tenders.
- The successful tenderer, who becomes the contractor, then enters a subcontract with the design team and has a management role co-ordinating the completion of the design work in enough detail to allow construction to proceed.
- The contractor has responsibility to the principal for the performance of the design team and probably for the financial aspects of the consulting contracts.

The result is a D&C method of project delivery.

13.3

COST RISK BY TYPE OF DELIVERY METHOD

In recommending a particular method of project delivery, the principal should be made aware of the risks associated with each method. Where the contractor carries a risk the contract price can be expected to be higher than if the principal assumes the risk. The following list of project delivery methods shows an increasing transfer of risk from the contractor to the principal:

- lump sum with no escalation (rise and fall) and no time extensions (except for delay by the principal)
- lump sum with no time extension (except for delay by the principal)
- lump sum with no escalation
- lump sum with escalation and time extensions
- lump sum with escalation and compensation for cost of delay
- partial lump sum with contract packages (trade packages)
- partial schedule of rates with contract packages
- schedule of rates
- cost-plus fixed fee
- cost-plus percentage fee.

Sometimes the quantity of work is so uncertain (e.g. the quantity of rock that may be incurred in excavation) that it is in the interest of the principal to have a rate for the work rather than a lump sum. This is particularly so for a principal such as a government authority that may be entering many contracts. It can be demonstrated that there can be a saving for the principal in accepting some risk. Insurance companies make money out of accepting risks. Contractors who try to avoid accepting any risk may find it hard to obtain contracts.

13.4

CLAUSES AND CONDITIONS OF CONTRACT

Within any conditions of contract there will be provision for completing or amending individual clauses, which will have the effect of allocating a risk to (imposing an obligation on) the principal or the contractor.

To minimise the chances of the contractor taking advantage of particular contract conditions, it may be a reasonable policy to get the contractor to give two tender prices, one on the basis that the contractor accepts certain risks and the other on the basis that the principal accepts those risks. The second price could be considerably lower. This procedure is not, however, often followed in practice.

13.5

RISK IN SPECIFIC CONTRACT CLAUSES

Contract price

There are two basic pricing options. One is lump sum (also called fixed price). The other is a rate. With a rate, the final price will be less predictable. Cost-plus is a rate. Although the term is often anathema to the principal, sometimes the work to be carried out is so ill defined or so risky that it will be impossible to obtain a lump-sum price. Fast-track projects are an example. Sometimes the advantage of fast-tracking the project may exceed the disadvantage of not having a fixed price.

One advantage of the construction management method with separate packages is that parts of the work can be let from time to time and the principal can keep an eye on the budget before letting more separate packages. A problem often arises when the

principal tries to hold the construction manager to a fixed lump-sum price for management where there are no limits on the quantity of work to be managed or the time within which the work must be carried out. For that reason, a percentage (based on construction costs) for the work of management may impose less risk on the principal than a lump sum to which the construction manager cannot be held.

Contractors will frequently try to persuade the principal that a particular method of project delivery is the best. They may suggest methods such as construction management with 'guaranteed maximum price' to dress up a contract that actually imposes on the principal a greater risk than the traditional method of project delivery. Fashions come and go in the industry, but the basic methods of project delivery remain unchanged. Someone must do the design work; someone must do the construction work; payment must be either a lump sum for any item or a rate for the item; variations ordered must be reasonable; in the absence of agreed times, the law will imply that an obligation must be performed within a reasonable time.

Quantities

The principal must decide whether to give tenderers any estimates of quantities, either in a bill of quantities or in a schedule of rates. Giving any estimate of quantities brings risks for the principal but there are also advantages.

If the principal gives any information to tenderers that is misleading or deceptive, s. 52 of the *Trade Practices Act 1974* or s. 42 of the *Fair Trading Act 1987* (NSW) may render the principal liable for damages. It is impossible to contract out of such liability and liability attaches whether or not the principal is aware that the information is misleading. Stating that a bill of quantities provided by the principal is not part of the contract will not protect the principal.

If estimates of quantities are given, limits of accuracy (see cl. 3.2 of AS2124-1986) are important to protect the principal. It is also important to ensure that there are no omitted items (see cl. 3.3 of AS2124-1986).

Latent site conditions

The principal does not have to give bore log data or other technical information to tenderers about the expected soil conditions. The principal's legal obligation is not to mislead. Giving any information involves risk, but not giving any information also involves risk in that without any information tenderers may tender higher prices.

Including a latent site condition clause involves a risk for the principal but omitting it involves a risk of higher tender prices.

Possession of site

Delay in giving possession of the site or interfering with possession can give rise to claims against the principal. The risk can be reduced by various limitation of liability clauses but they can involve an increase in tender prices. The contractor should discuss with the principal the likelihood of delay and weigh the likely cost of a limitation of liability clause against the actual risk of delay. Limitation of liability clauses should not be automatically included. The contract may look as if it protects the principal but in fact it may be a costly exercise for the principal.

If it is decided to include a limitation of liability clause, the principal should be advised of the advantage of obtaining good legal advice on the clause. A limitation of liability clause which is ineffective may increase the tender prices without any corresponding benefit to the principal.

Practical completion

The benefits of a short contract time should be weighed with the likely cost in terms of the tender price. Consideration should be given to whether the early finish of the project will be of sufficient financial benefit to the principal to warrant the likely cost of a short contract time.

The principal should also confirm whether the principal wants a price that excludes extension of time for wet weather, strikes and other events. What cannot be effectively excluded is extension of time for delays by the principal.

Liquidated damages should be considered. They both impose a risk on the principal and reduce a risk. The risk they impose is that they set a ceiling on the damages that the principal can recover for delay. The benefit they provide is that the principal will not have to prove the actual damage suffered by reason of delay.

Delay costs

Some conditions of contract provide recompense for the contractor for costs associated with certain delays that are not the fault of the contractor. The advantage of this for the principal is the possibility of a lower tender price. This must be weighed against the risk of a blow-out in costs.

Costs arising from a breach of contract by the principal are

another matter. It is possible to have liquidated damages for delay by the principal, just as there are liquidated damages for delay by the contractor. If there is a real risk of delay by the principal, this can be a sound precaution.

Escalation (cost adjustment, rise and fall)

The use of the National Cost Adjustment Provision (NCAP2) is recommended. It can save the principal money. It can also mean that the principal is liable for more than anticipated. Principals who let many contracts usually use NCAP2 because in the long run they save money.

Nominated subcontracts

The advantages and disadvantages must be considered. Sometimes the risk of letting the main contractor sublet specialist work to anyone is greater than the principal wants. The principal might prefer to take the risk of extra liability on account of the default of the nominated subcontractor. Consider advising the principal about a collateral contract with the nominated subcontractor.

Sometimes letting a contract to a 'designated subcontractor' (see cl. 10.2 of AS2124-1986) before letting the main contract can save time.

Insurance

There is a risk in letting the main contractor arrange the insurance of the work. The principal may be better advised to negotiate a policy (often called 'principal-controlled insurance'). On larger contracts the principal should obtain advice from an insurance broker. The project manager must not take on the role of an insurance adviser.

Separate contracts

Sometimes risk can be reduced by dividing work between several separate contractors, but then there is the risk that one will delay the other and a claim will be made against the principal for lack of access.

Variations

No matter what the main contract says, there will be a limit on what variations can be directed. If there was no limit, there would be no contract. The limit is what is reasonable. It may be possible to extend what is reasonable by spelling out in the contract some possible variations which would not otherwise be reasonable. There are advantages to agreeing ahead of time on the rates and prices to apply to likely variations.

Design

The principal should be advised on the advantages and disadvantages of engaging a separate design consultant as compared to letting the contractor do both design and construction.

The responsibility for design and for suitability for purpose should be identified.

Security

The principal should be advised on the need to make checks on the reputation and apparent financial position of tenderers. Security can be cash, 'bank guarantee', or other forms. Ultimately the principal pays for the cost of security in the tender price. Retention moneys provide another form of security. Again, the principal should consider the cost of including a large retention in the contract.

Risk of damage to the works

Under most general conditions of contract in use, except those published by the MBA, the works are at the risk of the contractor until the date of practical completion. If a project manager is considering recommending a form of contract published by the MBA, the clause dealing with damage to the works should be checked carefully.

For example, cl. 8.01 of JCC-C provides that the contractor is only liable for damage to the works that is caused by the negligence of the contractor. It is often difficult to demonstrate the cause of damage and hence this clause imposes a very real risk on the principal. It is this type of risk that the principal will expect the project manager to have considered when the project manager recommends a form of general conditions of contract.

Early possession

If the principal is likely to want to use or occupy a portion of the works before the whole of the works reach practical completion, a form of general conditions of contract that allows early taking over of a portion of the work, for example cl. 35.4 of AS2124-1986, should be considered. In comparison, cl. 9.10.04 of JCC-C deems the whole of the works to have reached practical completion if the principal occupies or uses any part before practical completion of the whole.

Generally

Almost every allocation of a risk involves creation of another risk. The project manager should be considering what is the most

efficient risk allocation for the particular principal given the needs of the principal and all the circumstances. Ultimately the choice lies with the principal. The risk for the project manager is a liability to the principal for giving misleading advice or for not giving the advice that the project manager contracted to give the principal. A project manager will be expected to be familiar with the form of contract conditions recommended to the principal.

13.6

SPECIAL CONDITIONS OF CONTRACT

Most standard forms of general conditions of contract do not adequately cover all the risks that can be identified by the parties to major construction projects. Several organisations have prepared checklists of points which they think should be covered either by the standard form or by special conditions appended to the standard form. But many would disagree with some of the things on the lists.

13.6.1 The BOMA checklist

The Building Owners and Managers Association (BOMA) produced the following list of attributes, which it considers should be addressed by principals drawing up conditions of contracts. These should:

- 1 be written as simply and concisely as the need to fully express all rights and obligations will permit
- 2 clearly state all important dates, times and values
- 3 contain an order of precedence of contract documents
- 4 confer on the principal a right to order additional work without additional cost save for the actual cost of that work and a predetermined percentage for overhead and profit. Where work is deleted, its actual cost and a percentage for overhead and profit should be deducted from the contract price.

BOMA addressed the relationship between the principal and the contractor in the following terms: 'The contractor should be made responsible for protecting the whole of the work until practical completion or until the principal takes over the whole of the work, whichever occurs later'. (It is interesting that despite this provision, BOMA has endorsed JCC-C, which in cl. 8.01 provides the opposite.)

- 1 The contractor's obligation to bring the works to practical completion may be extended by reason only of:
 - the principal's variations or instructions

- inclement weather over and above a period of days allowed as a contingency
 - default of the architect or any other agent of the principal.
- 2 Applications for extension of time must be in a prescribed form, made within stipulated times. Failure to observe time limits should absolutely bar the contractor from the right to time extension, and from consequent recovery of costs or damages.
 - 3 Time extension costs, at a pre-determined rate, should be allowed only for the delays caused by the principal or someone for whom the principal is responsible.
 - 4 The contract price should remain firm for contracts of less than two years' duration. Rise and fall should be paid up to the limits of a pre-determined contingency, for contracts of more than two years' duration.
 - 5 The principal may suspend the works, for any reason, for periods in aggregate no greater than a pre-determined period of time, without cost to the principal.
 - 6 The principal is entitled to deduct liquidated damages from amounts otherwise due to the contractor, at any time after the date for practical completion (as extended) has been reached.
 - 7 The contractor should ensure that the provisions of all relevant awards and registered industrial agreements are complied with. Any other agreement, whether registered or not, entered into by the contractor after the date of commencement of the contract, should be at the contractor's cost.

13.6.2 The BISCOA checklist

The Building Industry Specialist Contractors Organisation of Australia (BISCOA) similarly produced a checklist for its members and it recommended that these points be included in the contract conditions entered into by its members:

- 1 The subcontract conditions should be fully expressed and in no sense dependent on the provisions of the head contract.
- 2 They should contain provision for clearly stating dates for commencement and dates for completion and allow scope for the inclusion of the subcontractor's program as one of the contract documents.
- 3 They should indicate whether the subcontractor is a nominated subcontractor or not.
- 4 They should allow for the provision of securities in lieu of cash retention in all cases.
- 5 As an aid to interpretation, they should contain an order of precedence of contract documents, which specifically refers to the subcontractor's tender documents and which is consistent with the order of precedence in the companion head contract.
- 6 They should confer a right to a variation on the subcontractor in the event of any changes in the relevant codes or legislation after the date of tender.
- 7 They should compel the subcontractor to protect work only until each discrete stage of work has been completed.

- 8 If a single construction insurance policy is provided, a copy of the policy must be one of the contract documents.
- 9 Directions or instructions must be in writing, or confirmed in writing as soon as possible after the direction or instruction has been given.
- 10 Possession of and access to so much of the site and to all relevant parts of the site needed by the subcontractor to carry out work must be given at all necessary times.
- 11 The subcontractor must have complete freedom over choice of employees, without any restriction in respect of union membership.
- 12 The subcontractor must be permitted to sublet part or all of the works with prior approval of the contractor.
- 13 The surveying and setting out of the site must be clearly the responsibility of the contractor, including protection of survey marks.
- 14 The quality of the work to be carried out by the subcontractor must be in accordance with the specifications, rather than any other standard included in the subcontract.
- 15 The contract should be based on a five-day working week without any provision for overtime, unless otherwise specified.
- 16 Where a program forms part of the contract, any alterations to it after the date of tender must be treated as variations and, where appropriate, as conferring the right on subcontractors to claim and be paid time extension costs or compression costs.
- 17 The subcontractor must be entitled to claim and be allowed time extension and time extension costs in respect of delays that are beyond the subcontractor's control.
- 18 Any suspension of the works by the contractor, or by the contractor on the instructions of the principal, must have a temporal limit and carry with it the right of the subcontractor to claim any additional costs.
- 19 There should be no liquidated damages or indemnity clause included, or alternatively the contract should allow for the proper negotiation of realistic damages figures, based on the contractor's standing charges.
- 20 The contractor may not incur any cost on behalf of the subcontractor without first giving the subcontractor prior notice of intention to do so and giving the subcontractor an opportunity to carry out the appropriate work to avoid the incurring of the cost. Then the subcontractor must only be made liable for any such cost if the subcontractor has first been invoiced by the contractor.
- 21 The defects liability period should run for a fixed time from completion of the subcontractor's work, not from practical completion of the entire project.
- 22 The subcontractor should be obliged to pass on the benefit of any warranties that the subcontractor has obtained from suppliers or manufacturers.
- 23 Approval for variation prices should be given to the subcontractor within a fixed time, and payment made for variations progressively as the work is carried out.
- 24 Payment should be within a fixed time of claim in all cases, and should include amounts for unfixed materials. Interest at a fixed rate should be payable on late payments and specifically claimable in the next succeeding progress claim.

- 25 The stage of completion of the subcontractor's work should be defined by reference to the work to be done under the contract or any discrete stage of that work being able to be taken over by the contractor.
- 26 There should be clear provision for the subcontractor to terminate the contract in the event of the contractor's default, entitling the subcontractor to recover all costs, losses and expenses resulting from the default, including loss of profit on the entire contract.
- 27 There should be no compulsory arbitration clause. Rather, arbitration and litigation should be left open to the choice of the parties.
- 28 Upon the head contract being determined, the subcontractor should be entitled to recover the full value of all costs losses and expenses incurred up to the date of determination, together with loss of profit on the uncompleted portion of the work.
- 29 There should be a clear statement of the services and facilities to be provided by the contractor at no cost to the subcontractor.
- 30 Co-ordination of trade work should be clearly the responsibility of the contractor.

Notwithstanding these criteria, both BOMA and BISCOA endorsed forms of general conditions of contract and subcontract which do not comply with many of the criteria. There are a number of issues that could be addressed better in many construction contracts:

- 1 The people who draft construction contracts ensure that contractors accept responsibility for the management and control of subcontractors and do not avoid their responsibilities by passing on full project liquidated damages to each individual subcontractor.
- 2 Extensions of time should not be granted simply because there is delay 'to the progress of the works'. Such conditions do not acknowledge that the contractor has an obligation to overcome or mitigate the effect of delay or that there may be some slack in the program, such that even though there is a delay to the progress of the works there may be no resultant delay of the actual date of practical completion.
- 3 The definition of co-ordination needs to be expressed, in:
 - design co-ordination
 - construction co-ordination.

If full services documentation is prepared, then there should be an expectation that the services can be installed in their designed position and there should be no conflict with other services. If schematic services drawings are issued then there should be a clear statement as to the responsibility for co-ordination.

- 4 The contract should not give responsibility to third parties. Responsibility may be given to one or both of the contracting parties to deal with or liaise with

third parties, but this should be backed up by appropriate references in the subcontract of the third party.

- 5 Consideration should be given to predetermining delay costs in lieu of relying on substantiating actual costs. But there should be differing cost structures for different stages of the contract, for example:
 - before or after tower crane erection
 - if expenditure is less than (say) \$50 000/month.

These matters frequently generate a lot of discussion and heartache. If the points are addressed adequately in the contract, they might remove some of the causes of contract disputes.

DEFECTIVE WORK

14.1

INTRODUCTION

When the contractor supplies defective work, the rights and liabilities of the principal, the superintendent and the contractor do not depend only on the terms of the contract. Common law doctrines such as ‘waiver’, ‘estoppel’, ‘mitigation’, ‘de minimis’ and ‘unjust enrichment’ materially affect, and sometimes extinguish, those rights. These doctrines are never referred to in the contract. This chapter redresses that gap and discusses ‘economic waste’ and ‘economic breach’.

‘Defective work’ is any work, materials or workmanship that is not strictly in accordance with the requirements of the specification and drawings — whether it is inferior to or better than the contract requires. ‘Defective work’ is necessarily something provided by the contractor to the principal outside the terms of the construction contract. If work is within the terms of the contract, it is not defective work. ‘Defective work’ includes defects in drawings provided by the contractor.

Most construction contracts involving major work have provision for a superintendent to administer the contract on behalf of the principal. For this reason, the role of the superintendent receives particular attention in this chapter. What the superintendent does when a defect is apparent, whether noticed by the superintendent or not, can drastically affect the principal’s rights against the contractor.

Whenever defective work is discovered, the principal (or the superintendent on behalf of the principal) must elect between:

- directing that the defective work be removed

- not directing that the defective work be removed.

The contractor must elect between:

- removing the defective work
- not removing the defective work.

The election must be made promptly. Otherwise, despite what the contract states, the right to elect may be lost. Of course, the principal and the contractor can always agree to vary their contractual rights and that may resolve the problem. If the principal directs that defective work should be removed, then despite what the contract states, the contractor always has the right to refuse or fail to comply with the direction. Doing so may result in the contractor being liable to the principal for damages for breach of contract, but the damages may be much less than it would have cost the contractor to remedy the defect. Breach of contract may be the more efficient option. This is sometimes called an 'efficient breach' or an 'economic breach'.

If the contractor refuses to rectify the defect, the principal is not always entitled to recover as damages to the cost of rectifying the defect. Sometimes it may not be necessary and reasonable to rectify the defect. It would be economic waste to do so. Then the principal's right to damages is limited to such diminution in the value of the works as the principal can show arises as a consequence of the defect.

Because defective work can be superior to the specified work, the principal can be liable to pay extra if the principal or the superintendent allows defective work to remain. This is explained later, together with an explanation of the duty of the superintendent when the superintendent becomes aware of defective work.

Most forms of construction contract in Australia provide that on discovery of a defect, the superintendent can direct the contractor to rectify the defect. Only AS2124-1986 and contracts that have copied it specifically provide for acceptance by the principal of the defective work, or a variation to overcome the defect, in both instances with an adjustment of the contract price (see cl. 30.3 and cl. 30.4 of AS2124-1986).

No construction contracts deal with the common law rights that exist independently of the contract and can negate rights under the contract. These rights include the application of the doctrines of waiver, estoppel, mitigation, de minimis and unjust enrichment. The parties to the contract and the superintendent

must not only be aware of the provisions of the contract but must also be aware of these doctrines. Many disputes arise simply because one party or both are relying solely on rights or remedies spelt out in the contract. It is often only when the dispute gets to court or arbitration that it is discovered that the contractual right is extinguished or varied by some common law doctrine.

14.2

DUTIES OF SUPERINTENDENT

The superintendent is engaged by the principal to look after the interests of the principal, not to assist the contractor. The superintendent does not owe a duty to the contractor to discover defective work. But the superintendent does owe a duty to the principal to discover defective work. That is what the superintendent is engaged to do.

If the superintendent fails to inspect work or inspects but fails to detect defective work, then the superintendent may be in breach of the superintendent's terms of engagement. Sometimes the superintendent could also be guilty of common law negligence. The superintendent cannot be in breach of the construction contract. The superintendent is not a party to that contract. The contractor cannot sue the superintendent simply because the superintendent fails to make an inspection. But if the superintendent does make an inspection and fails to detect a defect, or, detecting a defect, fails to do anything about it, then the contractor may have rights against the superintendent. These are discussed in later in section 14.3 below.

As well as the superintendent's potential liability directly to the contractor, there is the principal's potential liability to the contractor for the acts or omissions of the superintendent. Cases where a contractor has succeeded in a claim against the superintendent are not common. But there are countless cases where the contractor has avoided liability to the principal on account of acts or omissions of the superintendent. When the superintendent is an employee of the principal, the *Employees Liability Act 1991* (NSW) requires the principal to indemnify the superintendent.

Under the construction contract, the superintendent does not have any authority to permit the contractor to do or leave defective work. Only the principal can make that decision. Sometimes, however, the principal has given the superintendent the additional authority to make that decision for the principal. Only then can

the superintendent allow defective work. Otherwise, the superintendent is limited to notifying the contractor that the principal elects to accept the material or work even though it is not in accordance with the contract.

In contracts that lack an express power for the principal to accept defective work (with a consequent adjustment of the contract price), the superintendent must be very careful to reject the defective work in all but trifling instances, unless the principal and the contractor arrive at some agreement. Otherwise, in the absence of a direction, the principal may be taken to have waived the right to complain about the defect or to have voluntarily accepted the defective work, thereby rendering the principal liable to pay for it on the basis of the doctrine of unjust enrichment. Only AS2124-1986 in cl. 30.4, and contracts that have copied this provision, have this express power.

In an attempt to overcome the gap that exists in most contracts, the superintendent sometimes attempts to order a 'variation' accepting defective work. A variation cannot be directed retrospectively. The superintendent's 'variation' power cannot validly be used to accept defective work. The purported variation is usually a waiver. The misuse of the variation power can lead to all manner of problems. In particular, it can lead to the principal being liable to pay the contractor the whole contract price without deduction for the defect, or being liable to pay the contractor on the basis of the contractor's costs of executing the defective work rather than the lesser amount that the defective work is worth to the principal. In that event, the principal's only redress would be against the superintendent.

Under the construction contract, the superintendent does not have any authority to negotiate an agreement between the principal and the contractor to overcome a defect. Only the principal can make the decision to agree with the contractor that for a certain reduction in the contract price, the principal will allow defective work to remain. Again, sometimes, the principal may have given the superintendent the additional authority to make that decision for the principal. Only then can the superintendent validly make an agreement between the principal and the contractor concerning what is to be done about the defect.

When the superintendent does have the delegated authority to negotiate an agreement concerning the defective work, that is usually the best solution. However, such an agreement is a legally binding agreement between the principal and the contractor. The superintendent must be careful to consider all possible

implications. This is covered in more detail in section 14.5 below.

14.3

IMPLICATIONS OF CONCURRENT TORT LIABILITY

In the present context, the superintendent can be liable to the contractor:

- 1 under the law of tort, for negligently breaching a duty of care owed by the superintendent to the contractor (a duty of care could arise if the superintendent gave the contractor advice)
- 2 under s. 5 of the *Law Reform (Miscellaneous Provisions) Act 1946* (NSW) for a contribution to damages which the contractor must pay the principal
- 3 under statute for misleading or deceptive conduct in the course of trade or commerce (s. 52 of the *Trade Practices Act 1974* or s. 42 of the *Fair Trading Act 1987* [NSW]).

So far as concerns the superintendent's functions of administering the construction contract, liability under 3 is little more than a theoretical possibility. In the superintendent's relationship with the contractor, the element of 'trade and commerce' seems to be absent. In so far as the superintendent is an agent of the principal, the misleading conduct could be imputed to the principal, thereby rendering the principal liable for the breach of s. 52 or s. 42.

Liability under 1 is easily avoided. Don't give the contractor advice. Don't use construction contracts that require the superintendent to approve work or drawings. Don't make the contractor's rights dependent on the opinion of the superintendent.

Liability under 1 is liability directly to the contractor for the contractor's own loss or expense. It is liability for breach of a duty of care in tort owed by the superintendent to the contractor. Liability under 2 is liability to reimburse to the contractor amounts that the contractor must pay the principal. It is liability for breach of a duty of care in tort owed by the superintendent to the principal, not the contractor. Liability under 2 cannot arise where the superintendent is an employee of the principal and it cannot arise unless the contractor has a liability in tort (usually an act of negligence) to the principal.

Liability under 2 is a very real risk when the superintendent is a consultant engaged by the principal. Section 5 of the *Law Reform (Miscellaneous Provisions) Act 1946* provides that if two or more

persons commit separate torts (usually acts of negligence) that give rise to the same damage, each can seek an order from the court that the other must contribute a portion of the compensation. The portion will depend on the respective blameworthiness of the persons involved. The contribution can be as much as 100 per cent (as in *Pantalone v. Alaouie* 18 NSWLR [1989] 119).

An example of liability under 2 would be where the contractor negligently produces a drawing with a defect in it and the superintendent negligently approves the drawing without detecting the defect. Both may be in breach of a separate duty of care owed separately to the principal. If the principal were to sue the contractor or the superintendent, either the superintendent or the contractor could seek a contribution from the other under s. 5 of the *Law Reform (Miscellaneous Provisions) Act 1946*.

For present purposes it will be taken as settled that a liability in tort can exist side by side with a liability in contract. There are some cases, exemplified by the English Court of Appeal decision in *Barclays Bank v. Fairclough Building Society* [1994] 3 WLR 1057, where there will be no concurrent liability in tort and contract.

The basic common law rule is that no one has to assist another person unless there is some duty recognised by law, for example a parent to a child, a consultant to a client, an employer to an employee. But if someone voluntarily assists another, then the volunteer has a duty to do so without negligence. No one is obliged to be a rescuer, but having assumed the role, a rescuer must not act negligently.

The superintendent must distinguish:

- 1 instances where the superintendent is required by the principal to give the contractor advice
- 2 instances where the superintendent is voluntarily giving the contractor advice.

Instances of 1 are usually found in the construction contract when the superintendent is required to approve of work or drawings or to give certificates that are binding on the contractor. By carefully drafting the contract, these instances can be avoided.

The fact that the superintendent is required by the principal to give the contractor advice does not mean that the superintendent is authorised to give incorrect or misleading advice. The superintendent is not relieved of liability for giving misleading advice simply because the superintendent is bound by contract to give advice.

The superintendent should never voluntarily give the contractor advice. The principal has not engaged the superintendent to assist the contractor. If asked a question by the contractor, the superintendent might say to the contractor, 'I think the answer may be to do X, but I could be wrong. I have not considered all the implications and you must not rely on me. Get your own advice'. For more abundant caution, the superintendent should confirm in writing to the contractor that the contractor must get independent advice and not rely on anything said by the superintendent.

The superintendent can also mislead the contractor by silence. For example, if on an inspection the superintendent sees defective work and does not say anything, the contractor might be misled into believing the principal waives any rights with respect to the defect. Acting on that assumption, the contractor may cover over the defective work. Assume that subsequently the superintendent directs that the defective work be uncovered and removed. Assume that the contractor refuses to do so and is sued by the principal. Even though the contractor is responsible for the defective work, the conduct of the superintendent could give the contractor three separate avenues for avoiding or reducing liability.

The first, a complete answer, is estoppel (see next section). Estoppel could prevent the principal from taking any action against the contractor in respect of the defect. The second is a reduction in the contractor's liability by virtue of s. 10 of the *Law Reform (Miscellaneous Provisions Act) 1965* (NSW) (the '1965 Act'). The third is a contribution from the superintendent by virtue of s. 5 of the *Law Reform (Miscellaneous Provisions Act) 1946* (NSW) (the '1946 Act').

The 1965 Act s. 10 provides:

Where any person suffers damage as the result partly of his own fault and partly of the fault of another person or persons, a claim in respect of that damage shall not be defeated by reason of the fault of the person suffering the damage, but the damages recoverable in respect thereof shall be reduced to such extent as the court thinks just and equitable having regard to the claimant's share in the responsibility for the damage ...

The term 'fault' is defined in s. 9 of the 1965 Act to mean negligence or other act or omission that gives rise to a liability in tort. It does not apply where the liability is solely for breach of contract. For present purposes, however, it will be assumed that there is a concurrent liability in tort and contract. Then the reduction under s. 10 applies.

The third possibility is provided by the 1946 Act. Under that Act, the contractor may seek to be indemnified, in whole or in part, by claiming that although the contractor was negligent in performing the defective work, the superintendent was also negligent in not detecting the defect and directing its rectification before the work was covered over.

The argument would be that both the superintendent and the contractor owed a separate duty of care in tort to the principal and they breached their respective duties of care. Assume that a court finds the contractor and the superintendent equally blameworthy, then the court would order that each pay half the damages incurred by the principal. This would not apply where the superintendent is an employee of the principal (see *Employees Liability Act 1991* [NSW]). In such a case, the reduction in damages referred to in the 1965 Act would apply in lieu of the contribution under the 1946 Act. It is one or the other: a contribution to damages on account of concurrent negligence by the contractor and the superintendent (the 1946 Act) or a reduction in damages on account of the principal's contributory negligence (the 1965 Act).

Just as the superintendent has no duty to assist the contractor, so too the contractor has no duty to assist the superintendent. The prudent superintendent will discuss with the contractor the options for dealing with defective work. But the contractor has no obligation to assist the superintendent or to suggest a solution. The contractor is quite entitled to say, 'Tell me what you want me to do about the defective work'. The works are the principal's works. It is up to the principal, not the contractor, to decide what the principal wants done about a defect. But the contractor does not necessarily have to wait for an instruction. Pending an instruction from the superintendent, the contractor may be able to rectify defective work and thereby eliminate or minimise the contractor's liability for the breach of contract.

14.4

ESTOPPEL

Estoppel is a legal doctrine. Estoppel is a bar that precludes a person from denying or contradicting something. Sometimes, by preventing a person from denying or contradicting the existence of certain facts, the law prevents (estops) a person from relying on a legal right. For example, if by words or conduct a principal knowingly allows a contractor to carry out defective work, it may be

unfair that the principal should be able to take action against the contractor as a consequence of the breach. The principal may be estopped from denying that the work is in accordance with the contract. The principal is then said to be estopped from enforcing the contractual obligation.

Take the case where a contract requires the contractor to build a brick fence. Assume that in error the contractor starts building a paling fence. When the fence is half finished, the principal does an inspection. The breach is apparent. The principal has the opportunity to tell the contractor to rectify the breach. If the principal says nothing, the principal would probably be estopped from claiming that the contractor has breached the contract by building a paling fence. The contractor is in fact in breach of contract. But if the principal is estopped from relying on the breach, the contractor does not have to pay damages and the principal will have to pay the contract price, perhaps without any deduction for the fact that a paling fence costs less to build than a brick fence (see section 14.9, example 2).

The superintendent is the principal's agent. As far as the contractor's rights are concerned, an inspection by the superintendent has the same effect as an inspection by the principal personally. Hence whenever the superintendent becomes aware of a defect, the superintendent must act quickly. The superintendent must not allow the contractor to continue the breach. Otherwise, the superintendent may cause the principal to forfeit the right to take action against the contractor.

This obligation to act promptly is reflected in cl. 30.5 of AS2124-1986, where it is provided that as soon as practicable after the superintendent becomes aware of a defect, the superintendent must give a direction under cl. 30.2 (remove defective work) or cl. 30.3 (variation to overcome defect) or a notice under cl. 30.4 (principal accepts the defective work).

To avoid the possibility that the principal will be caught by the doctrine of estoppel, the superintendent may have to order that work or a portion of the work be suspended pending a decision on rectification.

There is an easy way for the superintendent to avoid the possibility that the contractor might allege that the superintendent delayed in giving a direction. Immediately on discovering defective work, the superintendent should give the contractor a direction to remove it, but the superintendent can add, 'I am prepared to consider other options, even withdrawing this instruction, if the contractor offers a satisfactory alternative by (date)'.

AGREEMENT TO OVERCOME DEFECT

The principal or, with the authority of the principal, the superintendent on the principal's behalf can negotiate with the contractor in an endeavour to make an agreement to overcome the problem caused by the existence of the defective work.

The agreement may be as simple as that the principal will accept the defective work in place of the specified work and the contract price will be reduced by an agreed amount. However, the agreement could be much more involved. The principal may agree to accept the defective work in return for a warranty by the contractor that the defective work will last 20 years. The warranty may go further. The contractor may agree that if at any time in the next 20 years the item ceases to function properly, the contractor will replace it at no cost to the principal.

Normally any action by the principal to recover damages for defective work must be commenced within six years after the defective work is done (*Limitation Act 1969* [NSW]). However, a warranty for a certain number of years can effectively extend that period. Then the principal has six years to sue running from when the warranty is breached.

The agreement may include provision of a bank guarantee as security for performance of the defective work for a specified period. It may include provisions that if the defective work causes the contractor to be delayed in the performance of any other work or necessitates a variation to any other work, the contractor will not be entitled to an extension of time or to any additional remuneration on account of the delay or the variation. The possibilities are endless.

If the principal voluntarily accepts defective work without any warranties, the principal accepts the risks that go with the defective work. The principal, or the superintendent on the principal's behalf, must make sure that all implications have been considered. Having accepted defective work, it will be very difficult to mount a claim based on the fact that the work is more defective than expected or causes problems that were not anticipated at the time of acceptance.

Sometimes the contractor will give assurances that the defective work will perform to a certain standard. If, in reliance on these assurances, the principal accepts the defective work, the principal may have a claim against the contractor under s. 52 of

the Trade Practices Act for misleading and deceptive conduct should the assurances prove wrong.

14.6

RECTIFICATION ORDER

If the superintendent decides to order rectification of a defect, the superintendent must give a specific direction. A direction to 'rectify work' is ambiguous. It could mean demolish and remove the defective work and replace it with the work required by the contract. It could mean leave the defective work there but patch it up. It could mean overcome the effect of the defect.

The superintendent must be careful to leave no ambiguity. The superintendent must use words such as 'remove that material from the site' or 'demolish that work' and 'then construct the work in accordance with the requirements of the contract'.

At the risk of liability for damages, the contractor always has the right to breach the contract. The contractor can always refuse to remove defective work. In that event, it is up to the principal to decide what action the principal wants to take, for example taking work out of the hands of the contractor, terminating the contract, or letting the defect remain and merely claiming damages. The option of terminating the whole contract will not always be available.

14.7

TRIFLING DEFECT

The law does not have regard to trifles. In law, a matter which is 'de minimis' (trifling) will be ignored — treated as not existing.

Sometimes a defect will be a mere trifle, inconsequential, of no real detriment to the principal. But the cost of rectifying it may be out of all proportion to the detriment caused. For example a polished wood floor may have a slight blemish. To rectify the blemish may necessitate sanding back and repolishing the floor. Nevertheless some over-zealous superintendent may order the contractor to do just that. The sensible contractor will refuse to comply with the direction. The principal cannot recover damages for a trifle.

The risk for the principal and the superintendent is that the contractor may comply with the instruction and sue for the cost

as a variation. The court or arbitrator may apply the de minimis rule, thereby ignoring the defect, and rule that the direction to sand back and repolish was a variation. The court or arbitrator might find that the blemish was a mere trifle that should be ignored. Then, ignoring it, the court or arbitrator would see the direction to sand back and repolish as extra work ordered by the superintendent.

14.8

PROGRESS PAYMENTS

Defective work has no value under the contract. It is not work under the contract. Therefore, on discovery of a defect, the superintendent must never include in progress valuations any amount for the defective work. In addition, the superintendent should estimate the cost of rectifying the defect, for example removing the defective work, and should deduct that amount from the progress valuation. The true value of work done must reflect the cost of removing defective work.

Assume that the contract requires the contractor to build a fence 10 metres long and that the contract rates are \$100 per metre. Assume that after the contractor has built 5 metres the contractor requests a progress payment of \$500. Assume that the superintendent inspects the fence and finds that the first metre is out of alignment. The superintendent must decide whether the defect is such that this metre of fence will have to be demolished. If the defective metre of fence will have to be demolished, the superintendent must estimate the cost of demolition. Assume it is \$25. The progress valuation would then be:

4m @ \$100	\$400
Less estimated cost of demolition	<u>\$25</u>
Progress value	\$375

If the fence can be realigned at a cost of \$25 without demolishing any portion, then the valuation would be:

5m @ \$100	\$500
Less estimated cost of remedial work	<u>\$25</u>
Progress value	\$475

The superintendent must not make the mistake of not making the deduction because, in the opinion of the superintendent, the

principal holds enough security and retention to cover the cost of rectification. Security and retention are to cover defects or defaults that have not yet been discovered, as well as other risks.

14.9

ELECTING TO ACCEPT DEFECTIVE WORK

Most forms of construction contract ignore the possibility of the principal electing to accept defective work. This is a shortcoming because, in practice, acceptance of defective work is quite common. In no form of construction contract is there power for the superintendent to accept defective work by way of a variation order. However, to overcome the shortcoming, the superintendent frequently purports to use a variation order to accept defective work. It is a mistake to do so.

Under cl. 30.4 of AS2124-1986, the superintendent can notify the contractor that the principal elects to accept defective work. The superintendent would first need the authority of the principal. That authority does not exist merely because the superintendent has the power to give the notice under cl. 30.4 (see section 14.2 above).

Voluntary acceptance of defective work entails quite different consequences from involuntary acceptance of defective work. The principal does not have to voluntarily accept any defective work but sometimes the principal has no choice but to accept defective work. That is involuntary acceptance. Sometimes it is impossible to rectify the defect or it would be economic waste to do so.

Voluntary acceptance of defective work does not give the principal a right to damages. The act of voluntarily accepting the defective work is usually a waiver of the breach. A waiver of the breach extinguishes the breach. It is no longer regarded as a breach. The superintendent has no power to order a variation retrospectively. For those reasons, AS2124-1986 includes cl. 30.4 to protect the interests of the principal. If the voluntary acceptance is under cl. 30.4, then under AS2124-1986 'the resulting increase or decrease in the value to the principal of the works and any other loss suffered by the principal shall be valued under cl. 40.2'. Clause 40.2 is the clause dealing with valuation of price adjustments generally.

Following are three examples of the implications of accepting or rejecting defective work.

Example 1

A contractor builds a fence but out of alignment. The principal must elect between accepting the work, even though it is defective, or rejecting the work. If the principal elects to accept the fence then the principal has waived the breach and has no right to damages. Unless the contract contains cl. 30.4 of AS2124-1986 or an equivalent provision, the principal must pay the full contract price. Under cl. 30.4, the price payable by the principal is adjusted to reflect the difference in value, if any, to the principal of a fence that is out of alignment compared to a fence that is in alignment as required by the contract.

If the principal elects to reject the fence, the contractor is then put to an election. The contractor must elect between rectifying the defect or not. Perhaps the defect is such that it would not be necessary and reasonable for the principal to rectify the defect if the contractor fails to do so. In that event, the damages for which the contractor would be liable are the diminution in value of the fence as a consequence of it being out of alignment. Depending on the particular circumstances, this amount may be nominal or considerably less than the cost of rectifying the defect. It may be more economic for the contractor to refuse to rectify the defect.

If it is not necessary and reasonable for the principal to rectify the defect yet the principal incurs the expense of doing so, the principal would not be entitled to recover that cost. This is because the law requires the principal to take reasonable measures to mitigate (minimise) the principal's damages.

On the other hand, if it is necessary and reasonable to rectify the defect and the contractor refuses to do so, the principal can recover the cost of rectification as damages.

Example 2

A contractor builds a paling fence in lieu of a brick fence as specified in the contract. The paling fence costs \$1000 to build compared with \$3000 to build a brick fence. The principal must elect between accepting the paling fence or rejecting it. If the principal elects to accept the paling fence the principal must pay a reasonable price for the work — \$1000. Except where the election is under cl. 30.4 of AS2124-1986 or equivalent, the payment does not increase the contract price — it is a payment outside the contract. If the construction contract contains the usual variation clause, the principal can vary the contract and omit the brick fence. That variation may reduce the contract price by \$3000.

The superintendent must never 'accept' the paling fence by a variation order. How can the superintendent direct the contractor to build something that is already there? Moreover, the contract provisions for variations can result in anomalies. For example, the contractor may become entitled to an extension of time for the additional work (a paling fence) and to prolongation costs. Most contracts do not include provision for reduction of the contract period to reflect the omission of the brick fence.

Except in those contracts that contain cl. 30.3 and cl. 30.4 of AS2124-1986 or an equivalent, the contractor does not have to allow the principal the right to elect to accept the defective work. The contractor can say, 'No you cannot have the paling fence unless you pay me \$2000 for it'.

Example 3

Taking the preceding example, assume that the situation was reversed, the contractor builds a brick fence (\$3000) instead of a paling fence (\$1000). If the principal elects to accept the brick fence, then, except where the election is under cl. 30.4 of AS2124-1986 or equivalent, the principal must pay \$3000 for the fence.

Where the election is under cl. 30.4 of AS2124-1986, there is an entirely different measure of the amount payable by the principal for the fence. The amount payable is the increased value, if any, to the principal of the brick fence over a paling fence. If the principal has already contracted to sell the premises, or if the principal has no intention of ever selling the premises, there may be no increased value to the principal. In that event, under AS2124-1986, the contractor would receive the same contract price even though it cost the contractor three times more to build the brick fence.

If the superintendent made the error of purporting to direct a variation 'accepting' the brick fence in lieu of the paling fence, the principal would have to pay \$3000 for the brick fence — with a credit of \$1000 for the paling fence, which is omitted from the work under the contract.

What should the superintendent do? In contracts without the equivalent of cl. 30.3 and cl. 30.4 of AS2124-1986, the answer is for the superintendent to tell the contractor as soon as the defect is discovered:

The principal does not accept the brick fence. It is not work under the contract.
You must remove it and build the fence specified in the contract. However, the

principal is prepared to accept it on the following conditions (e.g. price, warranties, no extension of time, etc.). You may accept this offer by notice in writing delivered to me by 5pm on (date).

The superintendent would need the prior authority of the principal to make this offer on behalf of the principal.

When the principal elects not to accept the brick fence, the contractor is in trouble. The contractor has no right under the contract to payment of extra for the brick fence. It is not work ordered by the principal. In rare cases, such as where the superintendent stood by, knowing that the contractor was building a brick fence instead of a paling fence, and said nothing, the contractor may have a remedy in restitution based on the doctrine of unjust enrichment. The mere fact that the principal is enriched by the error of the contractor is not unjust. For unjust enrichment, there must be some conduct on the part of the principal which the law classifies as unjust. The contractor's view, or even the view of a reasonable person of what is unjust, is irrelevant (see next section).

Assume the contractor does not remove the brick fence as directed. Assume that it is not necessary or reasonable for the principal to demolish the brick fence. Assume that there is an increase in value to the principal of the works (\$3000–\$1000). Under AS2124-1986 or any other form of contract, the contractor would not be liable for damages and the principal could keep the additional benefit without being unjustly enriched.

Now consider how different the situation would be if the superintendent tried to regularise the situation by issuing a variation order. Now the principal would have to pay an extra \$2000 (\$3000–\$1000) as the price of the variation, and perhaps grant an extension of time. The superintendent should never use a 'variation' in such circumstances.

Of course, the principal and the contractor may agree that the principal will accept the defective work. They may agree on a price at which the principal will accept the defective work. But sometimes, particularly if the principal is in a hurry to occupy premises or the rectification would delay other contractors to the principal, the principal will want to be able to accept defective work whether or not the contractor wants to hand it over. Then cl. 30.4 of AS2124-1986 can be most useful. Generally speaking, unless agreement is reached between the principal and the contractor on the adjustments to be made to price, warranties, etc., the principal is better advised not to voluntarily accept defective work.

VALUING INVOLUNTARILY ACCEPTED DEFECTIVE WORK

If the principal involuntarily accepts defective work, then it is a question of quantifying the principal's entitlement to damages for breach of contract. That entitlement can be either:

- estimated or actual cost of rectification, or
- diminution in value.

Involuntary acceptance may occur where the contractor refuses to rectify a defect when directed to do so, or where the principal learns of the defect when it is too late to order rectification.

The courts have developed some tests to determine whether the principal should be entitled to rectification costs and when the principal should be confined to diminution in value (see *Belgrove v. Eldridge* [1954] 90 CLR 613). Rectification costs can sometimes exceed by far the diminution in value. For example, the contractor may install PVC pipes where steel pipes were specified. The cost of excavating and replacing the pipes may be out of all proportion to the loss, if any, suffered by the principal by reason of the breach. The usual test in Australia is whether rectification is 'necessary' and 'reasonable' (*Belgrove v. Eldridge* [1954] 90 CLR 613). If rectification is unnecessary and unreasonable, the principal may be confined to such diminution in value of the works as the principal can prove.

Even where the substitution is deliberate, generally speaking the principal is confined to recovering the loss suffered by the principal rather than the saving made by the contractor. The importance is in the word 'recovering'. If the principal has not paid the contractor, the principal cannot be compelled to pay the contractor for work that the principal did not order. The principal is not bound to pay for the defective work. But having paid for it, the principal is confined to one of two remedies, rectification costs or diminution in value. For this reason, it is most important that the superintendent carefully inspects work before including a value in a certificate.

There are three exceptions to the statement that the principal cannot be compelled to pay the contractor for work that the principal did not order. The first is where the principal is estopped

from denying that the principal ordered the work (see section 14.4 above). The second is where the contractor has a right to payment outside the contract. Sometimes a contractor has a right to 'restitution' based on the doctrine of unjust enrichment. The third is where the works are substantially complete.

The term 'restitution' is a legal term. By way of restitution, a court or arbitrator may award a contractor a quantum meruit, that is, a reasonable price for work done. Examples of where a contractor might recover a quantum meruit are:

- 1 where on the express or implied instructions of the principal or the superintendent, the contractor performs additional work outside the contract (*Update Constructions Pty Ltd v. Rozelle Child Centre Ltd* [1991] 20 NSWLR 251)
- 2 where in an emergency, the contractor performs work that is outside the contract but benefits the principal by preserving property of the principal from damage (*agency of necessity*: Goff & Jones 1993)
- 3 where the contract is terminated by frustration but work continues (*Codelfa Construction Pty Ltd v. State Rail Authority* [1982] 149 CLR 337)
- 4 where the principal voluntarily accepts defective work (*free acceptance*; Goff & Jones 1993: 166)
- 5 where the principal repudiates the contract and the contractor elects to treat the contract as at an end (*Renard Constructions (ME) Pty Ltd v. Minister for Public Works* [1992] 26 NSWLR 234).

In each of these instances, the principal could be said to be unjustly enriched if the principal failed to pay for the value of work received. The right to restitution is a right that exists outside the contract. If the contract covers the situation, either by providing that the contractor is entitled to be paid or that the contractor is not entitled to be paid, then there is no unjust enrichment. Enrichment pursuant to a contract is not unjust enrichment. The doctrine of unjust enrichment does not override the law of contract. It fills a gap not covered by a contract.

The doctrine of 'substantial completion' works as follows. If the works are substantially complete and the principal has the use of them, then even though there are defects, the principal must pay the contract price less an amount that equals the damage suffered by the principal by reason of the defects. The damage suffered by the principal will be the cost of rectifying the defects or, if it is not necessary and reasonable to rectify the defects, the diminution in value of the works as a consequence of the defects.

VARIATIONS TO OVERCOME A DEFECT

When the superintendent detects that the contractor is performing defective work, it may be more expeditious to let the contractor finish than to order that the contractor remove the defective work and start again.

Take the case where the contractor is building a high-rise building. The contractor may have built a concrete lift shaft when the superintendent discovers that the dimensions of the shaft are smaller than specified but only by a few centimetres, which are nevertheless enough to require a variation in the dimensions of the lift. The cost of rectifying the lift shaft may be out of all proportion to the cost of varying the dimensions of the lift, say \$10 000.

Under AS2124-1986, the superintendent would give the contractor three separate directions, which can be combined in the one document. They are:

- 1 a notice under cl. 30.4 that the principal elects to accept the lift shaft already constructed, notwithstanding that it is not in accordance with the contract
- 2 a variation under cl. 30.3 omitting the specified lift shaft, which is now replaced by the 'defective' lift shaft
- 3 a variation under cl. 30.3 changing the specified dimensions for the lift so that it fits the lift shaft accepted by the principal.

Under AS2124-1986, there are three separate sources of power to order a variation. They are:

- 1 cl. 30.3, a variation to overcome a defect
- 2 cl. 40.1, para 2, a variation for the convenience of the principal
- 3 cl. 40.1, para 6, a variation for the convenience of the contractor.

Under AS2124-1986, the principal would not have to pay the contractor anything for the variation. Clause 30.3 of AS2124-1986 provides that a variation under cl. 30.3:

Shall be valued under cl. 40.2 and:

- 1 if the variation causes an increase or decrease in the value to the principal of the works, regard shall also be had to the increase or decrease; and
- 2 if the variation results in the contractor incurring more or less cost than would reasonably have been incurred had the contractor been given a direction under Clause 30.2, regard shall also be had to the difference.

However, under forms of construction contract in use in Australia, except those that have copied AS2124-1986, only the

second type of variation is provided. The consequence is that if the superintendent orders a variation to the lift dimensions, the contractor will be entitled under the contract to the additional cost of the variation (\$10 000 in the example) and an extension of time.

The principal might argue that the cost of the variation (\$10 000) is damages flowing from the defective work. The problem with that argument is that \$10 000 is not payable by the principal on account of the contractor's breach. The breach has not caused the principal to be liable to pay \$10 000. The principal is liable to pay because the principal was naive enough to promise without qualification to pay the contractor for variations ordered by the superintendent. The principal did not limit the principal's risk by imposing the qualification that the variation must not be one necessitated by defective work by the contractor.

Standard forms that fail to provide for this contingency come in for trenchant criticism in Duncan Wallace (1995: 881). AS2124-1986 covers the problem in cl. 30.3.

14.12

SUMMARY

The best summary is the following instruction to the superintendent:

- 1 If you discover defective work act promptly. Don't rely on the contractor. The contractor is not bound to come up with any proposals and may recover delay costs from the principal if you delay in giving a direction.
- 2 You don't have to tell the contractor how to remedy the defect but your direction must be specific. Don't say 'rectify'. Say exactly what must be demolished or what repair work must be done.
- 3 Don't accept defective work unless you have the principal's authority.
- 4 If you accept defective work, do so under either:
 - a collateral agreement between the principal and the contractor
 - if the conditions are AS2124-1986, a notice under cl. 30.4.

Otherwise, voluntary acceptance may act as a waiver by the principal of rights against the contractor or may result in the principal being liable to pay the contractor the cost of executing defective work.

- 5 Never include the value of defective work in any progress or final valuation. Once defective work is voluntarily accepted, it ceases to be defective work and it has a value.
- 6 Never use a variation order to accept defective work

- 7 Frequently, if you accept defective work, you must order a variation omitting the specified work that is replaced by the defective work. Sometimes subsequent work must also be varied to take account of the defective work. Under AS2124-1986, that variation should be under cl. 30.3.
- 8 Under AS2124-1986, accepted defective work and variations consequent on a defect are valued differently from normal variations. The valuation under cl. 30.3 and cl. 30.4 must take into account the value to the principal rather than the cost to the contractor.
- 9 Under other forms of contract, the ordering of a variation to overcome a defect may be costly for the principal. The variation should not be ordered without exploring all the implications and alternatives.
- 10 Under other forms of contract, accepting defective work otherwise than under a collateral contract is fraught with risk for the principal.

LEGISLATION AND REGISTRATION

15.1

LEGISLATIVE FRAMEWORK

Legislation governs who can do certain work (e.g. licensing acts), what work can be done (e.g. planning acts) and how the work is to be done (e.g. the Building Code of Australia).

The moment you take over the controls of a vehicle you become subject to legislation governing who can drive, what they can drive and how they are to drive. The legislation is different from State to State and in each Territory. Ignorance of legislation is no defence against failure to observe it. You have to find out what the legislation is or suffer the consequences, which can be severe. Similarly, anyone undertaking building or construction must discover the relevant legislation governing building and construction activities in the area. The consequences of non-compliance can not only be prosecution, a fine or gaol, but economic ruin.

Since the bulk of the relevant legislation is different in each State and Territory, and changes so rapidly, this chapter deals with the type of legislation to watch out for rather than particular acts and regulations.

15.2

CONTRACTING ENTITY

The first thing to consider is who is or is to be the contracting entity. Is it to be an individual, a sole trader? Is it to be a partnership

or a corporation? (A non-government corporation is commonly called a company.)

An individual going into business often forms a company, sometimes on the advice of an accountant who knows nothing about the laws governing building and construction. The result can be that it is not clear whether the party entering the construction contract is the individual or the company. For example, John Smith might be a licensed builder but he may wish to enter contracts in the name of his company, Smith Constructions Pty Ltd. John Smith will be the person dealing with the client and the client may see John Smith as the builder.

This can have most important consequences. For example, if a licence is necessary to carry out the work and the individual but not the company has the licence, a contract entered into in the name of the company may be unenforceable. Both the individual and the company may be barred from recovering payment for work done. The consequences for insurance are also most important. Is it the individual or the company which is the insured under the insurance policy?

There will also be issues of tax liability and personal liability. If the company is incorporated with limited liability and is successfully sued by the client, the assets of the company can be taken to satisfy the judgment debt, but not the assets of the shareholders. Directors don't have quite the same protection as shareholders, but provided the company pays its tax and the directors do not permit the company to continue to trade when it is insolvent, the directors will usually not have any personal liability for the debts of the company. However, if John Smith has dealt with the client and has not made it clear that he is acting only as agent of the company, he may find that he has personal liability to the client.

15.3

LICENSING AND REGISTRATION

In all jurisdictions, specialist work such as electrical, plumbing and gasfitting can only be carried out by or under the supervision of a person who has a licence to carry out that particular work. There are severe penalties for any unlicensed person who carries out the work (other than as employee or under the supervision of a licence holder).

For non-specialist work, the legislative situation is not so

uniform. In some jurisdictions, licensing and registration or licensing or registration is required for certain work (e.g. residential building work) but not other (commercial) building work. For example, at present in New South Wales a builder carrying out non-residential building work is not required to be registered or to have a licence. But this is not the case in all jurisdictions (in some all builders need to be registered) and even in New South Wales this may not always be the case in the future. Representations have been made to the NSW Government to introduce legislation for compulsory registration of all contractors and subcontractors in the construction industry.

The situation is further complicated by the fact that the statutory definitions of the work for which a licence or registration is required, who is required to have a licence or be registered, and prerequisites for registration differ from one jurisdiction to another and from year to year, almost month to month. The absence of statutory uniformity in Australia is a major inconvenience and cost in many areas, not just building and construction.

Even terms such as 'residential building work' and 'commercial building work' can be deceptive. The construction of a 30-storey block of mixed residential and commercial units is 'residential building work' under the *Home Building Act 1989* (NSW) but a boarding house or a residential college for a university is not.

Terminology varies from State to State. For example, the Victorian equivalent of the *Home Building Act 1989* (NSW) is the *Domestic Building Contracts Act 1995* and the Victorian Act uses the term 'domestic building work' rather than 'residential building work'. Where in New South Wales a builder is licensed, a builder in Victoria is registered. In New South Wales disputes arising from residential building work can be referred to the Fair Trading Tribunal. In Victoria disputes arising from domestic building work can be referred to the Victorian Civil and Administrative Tribunal.

In Queensland it is the *Queensland Buildings Services Authority Act 1991*, which covers all building work, and all builders are required to be licensed. In South Australia there is the *Building Work Contractors Act 1995*; in Tasmania, the *Local Government (Building and Miscellaneous Provisions) Act 1993*; in Western Australia, the *Builders Registration Act 1939* and in the Northern Territory, the *Building Act*. In each jurisdiction the legislation has important differences. There has been no attempt at uniformity.

15.4

UNLICENSED CONTRACTING: OFFENCE

Sometimes the statutory offence is to carry out work without a licence or without being registered. Sometimes it is to contract, without being licensed or registered, to carry out or to supervise the carrying out of work by others, even if no work is actually carried out or all work is carried out by appropriately licensed contractors. Sometimes a licence or registration is required before even contracting (e.g. as a construction manager as agent of the owner) to have others supervise or carry out work. The amendments to the *Home Building Act 1989* (NSW) introduced by the *Home Building Legislation Amendment Act 2001* has introduced yet another category of licensing. Henceforth building consultants, even though they do no building work or supervision of building, will require a licence for consulting in respect of residential building work in New South Wales.

The relevant State or Territory law, if any, can be downloaded free from www.austlii.edu.au, but it is often difficult to find the particular act or regulation. Different jurisdictions use different titles and from time to time the title of the Act or regulation may be changed. For example, in New South Wales, at the time of writing, it is the *Home Building Act 1989* (previously called the *Building Services Corporation Act 1989*), but in most jurisdictions the relevant act begins with or includes the word 'Building' or 'Builders'. In Victoria the *Domestic Building Contracts Act 1993* deals with registration of builders and the *Building Act 1993* deals with permits for building work. On the other hand, in the Northern Territory the *Building Act* deals with registration of builders.

15.5

UNLICENSED CONTRACTING: PAYMENT

Assume that a patient goes to a person who the patient believes to be a doctor but who in fact has no medical qualifications, and has an operation performed. Even if the operation is a success, the patient could legitimately refuse to pay the bogus doctor. The patient contracted to have the operation performed by a doctor but it was not performed by a doctor.

Now assume that a patient has an operation successfully performed by a fully qualified doctor but due to inadvertence the doctor had not at the time of the operation renewed the doctor's

practising certificate or professional indemnity insurance. Assuming that the patient suffers no loss whatsoever as a consequence of the doctor's failure to hold a current practising certificate or be insured, should the patient then be able to refuse to pay? It might be said that if the patient did refuse to pay, the patient was unjustly enriched.

It is in this second situation where legislation commonly provides the answer. Legislation may provide that in the absence of current registration and insurance or current registration or insurance, the doctor is not entitled to recover any fees. On the other hand, if there is no legislation on this point, it would be a matter for a court to decide applying the common law.

When it comes to contractors and subcontractors, the situation is similar. If an Act provides that an unlicensed builder is not entitled to recover any payment for work done, then the owner cannot be said to be unjustly enriched. The Act justifies the enrichment.

This is sometimes the situation under a particular licensing Act. For example, the *Home Building Act 1989* (NSW) requires builders carrying out work to the value of more than \$5000 to have a particular form of insurance contract under the Act. It is a policy of insurance for the benefit of the owner and subsequent owners, not the builder. Section 94 of the Act provided that a person who enters a building contract without having a policy of insurance in place 'is not entitled to damages or to enforce any other remedy in respect of a breach of the contract committed by the other party to the contract or to recover money in respect of work done under the contract under any other right of action (including a quantum meruit action)'. This meant that an uninsured contractor could build a multimillion dollar building and recover no payment whatsoever even though the work was performed satisfactorily. This originally applied even if the failure to insure was an oversight that could be cured by subsequent insurance.

The injustice of the situation in New South Wales was eventually appreciated and the *Home Building Legislation Amendment Act 2001* amended s. 94 by the addition of subsection 1A, which provided that: 'Despite section 92(2) and subsection (1), if a court or tribunal considers it just and equitable the contractor, despite the absence of the required contract of insurance, is entitled to recover money in respect of that work on a quantum meruit basis'.

Failure to be licensed, registered or insured can have less drastic consequences. For example, s. 10 of the *Home Building Act 1989* (NSW) provides that a person who contracts to do residential

building work without being licensed or without having a written contract complying with certain requirements of the Act 'is not entitled to damages or to enforce any other remedy in respect of breach of the contract committed by the other party to the contract'.

Note how s. 6 only refers to damages and breach of contract and does not include the additional words 'or recover money in respect of work done under the contract under any other right of action (including a quantum meruit action)', which are found in s. 94. The consequence is that although the contractor is barred by statute from enforcing any remedy in respect of breach of contract by the other party, the Act does not bar a remedy at common law. The remedy at common law is a quantum meruit, that is, reasonable remuneration for the benefit received by the other party. If the contract price was a reasonable price, then a quantum meruit might equal the contract price. The principles are set down in the High Court decision in *Pavey & Matthews v. Paul* [1986] 162 CLR 221 (available at www.austlii.edu.au).

The remedies available to the contractor who breaches a provision of the relevant State or Territory licensing or registration act will depend on the precise wording of the relevant provision of the Act. Section 53 of the *Domestic Building Contracts Act 1995* (Vic.) gives the tribunal determining domestic building disputes a broad jurisdiction to declare an unjust contract or term void or to vary the contract and to order restitution. The NSW Fair Trading Tribunal is given similar jurisdiction by allowing the client (but not the builder) to invoke the *Contracts Review Act 1980* (NSW).

15.6

LIMITS ON FREEDOM TO CONTRACT

Sometimes legislation will dictate formal requirements for a valid contract. For example, s. 7(2) of the *Home Building Act 1989* (NSW) provides that a contract for residential building work must be in writing, be dated and be signed by or on behalf of each party and must contain:

- the names of the parties, including the name of the holder of the licence shown on the licence
- the number of the licence
- a sufficient description of the work to which the contract relates
- any plans and specifications for the work

- the contract price, if known
- any statutory warranties applicable to the work.

A person who (otherwise than as a subcontractor) contracts to carry out residential building work in New South Wales without a written contract containing all these requirements is liable to a fine (presently about \$2000), but the building contract may still be valid. However, if the building contract is not in writing or does not have a sufficient description of the work to which it relates, it is not enforceable by the builder but it can be enforced against the builder by the client (s. 10 of the *Home Building Act 1989* [NSW]).

In the *Domestic Building Contracts Act 1995* (Vic.), in s. 31, there is a similar provision for written contracts containing similar provisions to those listed above and, in s. 29, there is a penalty for a builder who, without being registered, enters a contract to carry out domestic building work.

In respect of residential building work, an arbitration clause may be rendered void by legislation (e.g. s. 7C of the *Home Building Act 1989* and s. 14 of the *Domestic Building Works Contracts Act 1995*). In New South Wales (s. 8 of the *Home Building Act 1989*) and in Victoria (s. 11 of the *Domestic Building Works Contracts Act 1995*), there is a limit on the deposit that a builder can require. It is 5 per cent of the contract price for a contract over \$20 000 and 10 per cent for contracts up to \$20 000.

Sometimes State legislation goes further, for example the *Building and Construction Industry Security of Payment Act 1999* (NSW) bars 'pay when paid' clauses (s. 12) and imposes an obligation on the client to provide a payment certificate within ten business days after receipt of a payment claim from the contractor (s. 14). If a payment certificate is not issued within the time, the whole of the progress claim becomes payable. Davenport (2000) provides a comprehensive guide to the Act and to amending contracts to take account of the effects of the Act.

Sometimes State legislation allows a court to review and revise a harsh or unconscionable contract. For example, s. 7 of the *Contracts Review Act 1980* (NSW) provides:

Where the Court finds a contract or a provision of a contract to have been unjust in the circumstances relating to the contract at the time it was made, the Court may, if it considers it just to do so, and for the purpose of avoiding as far as practicable an unjust consequence or result, do one or more of the following:

- it may decide to refuse to enforce any or all of the provisions of the contract,
- it may make an order declaring the contract void, in whole or in part,

- (c) it may make an order varying, in whole or in part, any provision of the contract,
- (d) it may, in relation to a land instrument, make an order for or with respect to requiring the execution of an instrument that:
 - (i) varies, or has the effect of varying, the provisions of the land instrument, or
 - (ii) terminates or otherwise affects, or has the effect of terminating or otherwise affecting, the operation or effect of the land instrument.

Relief under the Act will not be granted to a claimant who entered the contract in the course of or for the purposes of trade, business or a profession carried on by the claimant, except a farming business. A similar power to review unjust terms will be found in s. 53 of the *Domestic Building Contracts Act 1995* (Vic.).

Sometimes legislation only applies where the parties have failed to make provision for an eventuality. An example is the *Frustrated Contracts Act 1978* (NSW). It is common for a construction contract to provide that if the contract is terminated by the legal doctrine of frustration, the client will pay the contractor a reasonable price for work done to the date of termination, even though that work may have no value. In that circumstance the risk of frustration is essentially a risk which the client bears. However, if the construction contract makes no provision to deal with the circumstance of frustration, the Act provides that the loss is shared. The consequence could be that the builder has to refund moneys already received for work done.

15.7

TRADE PRACTICES ACT

The *Trade Practices Act 1974* can have most important implications. Not only does it permit a contract to be set aside where the contractor has acted contrary to the requirements of the Act but it also provides an independent right to damages for misleading or deceptive conduct (ss. 52 and 82). Such damages may be recovered even though the contract purports to exclude the liability. It is not possible to contract out of liability for a breach of the Act.

For example, it is not uncommon for a principal inviting tenders to provide tenderers with information, particularly geotechnical information, and to include a disclaimer such as: 'The principal will not be liable for any information provided'. Notwithstanding a disclaimer, the principal can be liable, outside

and independently of the contract, for damages suffered by the contractor because of having been misled by information provided by the principal before the contract was entered. The separate and independent liability can arise because of the breach by the principal of s. 52 of the Trade Practices Act.

Take the case where a contractor invites tenders for a subcontract to excavate a hole for a swimming pool. Assume that the contractor provides tenderers with a geotechnical report which says that the subsoil is sand. Assume that the subcontractor, relying on the report, tenders a contract price of \$10 000. Assume that the subsoil is rock and the subcontractor's equipment is insufficient to perform the contract. Assume that the contractor terminates the subcontract on account of the subcontractor's inability to perform. The contractor has the work completed by another subcontractor for \$25 000 and sues the first subcontractor for damages for breach of contract. The damages are the additional \$15 000 which it cost the contractor to have the work completed by another subcontractor.

The contractor may well be entitled to recover \$15 000 damages for breach of the subcontract, but the subcontractor could have a cross-claim for damages for breach of s. 52 of the Trade Practices Act. The subcontractor's damages would be the amount in money necessary to put the subcontractor in the position in which the subcontractor would have been had the contractor not provided the misleading geotechnical report. Had the report not been provided, the subcontractor might not have tendered and won the subcontract. The subcontractor would not have expended time and money on attempting to perform the subcontract and might not have incurred the liability for damages of \$15 000. The subcontractor may be able to recover from the contractor the \$15 000 and an amount in respect of the wasted time and money.

However, the important point to remember is that the remedy under s. 52 of the Trade Practices Act is only available where the misleading and deceptive conduct is 'in trade or commerce'. It would not be available to a contractor if the misleading information had been provided by a client for whom the contractor was building a house for the client to reside in. It would also not apply to the government in respect of the letting of a contract by the government where the government was not engaged in trade or commerce.

The *Trade Practices Act 1974* is a Commonwealth Act essentially concerned with conduct by the Commonwealth and

companies incorporated under Commonwealth law (now the *Corporations Act 2001*). Each State has a Fair Trading Act which imposes on individuals and State authorities liability for misleading and deceptive conduct in trade or commerce (e.g. *NSW Fair Trading Act 1987* ss. 42 and 68).

CONSTRUCTION PROGRAMS

16.1

INTRODUCTION

The term ‘construction program’ (also spelt ‘programme’) or ‘contract program’ or simply ‘program’ may be defined in the contract or bear its ordinary meaning. There are several ordinary meanings. One is that of a written document, usually prepared by the contractor, showing the contractor’s planned sequence of work. This document may be:

- incorporated as part of the contract documents
- provided by the contractor to the principal or superintendent pursuant to a requirement contained in the contract
- provided by the contractor to the principal or superintendent voluntarily
- retained by the contractor for the contractor’s own use.

The construction program might be created once and exist for the whole of the contract, but it is more common for the construction program to be regularly altered to reflect past progress and future expected or hoped-for progress. Sometimes ‘construction program’ is used ambiguously to refer to the several written documents, each being a separate construction program.

The term ‘construction program’ is also used to describe the actual or planned sequence of work as distinct from any document that might record the actual or planned sequence. Hence it can be that the contractor’s construction program (meaning the actual rate of progress or sequence of work) does not accord with the construction program (meaning a written document).

Sometimes when a project is finished and there is a dispute, an expert programmer will be asked to prepare a document which is also called a 'construction program'. Using hindsight, it documents the actual rate of progress and sequence of work and attempts to identify delays and the effect of certain events. It is usually called a 'work as executed program'. A variant of that is a 'but for' work as executed program. It shows what would have been the sequence of work but for certain events. It is usually used where a contractor makes a claim for damages on account of alleged delays by the principal. The 'but for construction program' shows what would have been the contractor's progress but for the alleged delays.

The form of a written construction program can vary from contract to contract. Under AS2124-1986 the construction program is 'a statement in writing showing the dates by which or the times within which the various stages or parts of the work under the contract are to be executed or completed'. Often a principal includes in the specification details of the nature of the construction program. For example, the NSW Department of Public Works and Services has several pages of standard requirements including one that the program show the sequence of activities that constitutes the critical path.

16.2

PURPOSE OF PROGRAMS

Contract conditions frequently provide that the contractor must not deviate from the construction program 'unless a deviation is directed by the superintendent' or 'without reasonable cause'. No contract conditions appear to provide for what damages must be paid by the contractor for failing to keep to a construction program. If the contractor nevertheless reaches practical completion on time, has the breach caused any loss to the principal?

Since the contractor bears the risk of completing the project within the contractually agreed cost and time, and in meeting contractual requirements may need to adjust the sequence of activities and the use of resources from time to time, it seems unreasonable to have a condition that the contractor must not deviate from the construction program 'without a direction from the superintendent'. On the other hand, it does not seem unreasonable to have a provision that the contractor must not depart from the construction program 'without reasonable cause'.

The purpose of the construction program is usually to provide information to the principal. This information may be necessary for the principal to co-ordinate the provision of design information or materials to the contractor. If the contractor does not keep to the construction program and does not give the principal adequate warning, the principal may be late in providing something to the contractor. In that event, the liability that the principal might otherwise have had to the contractor may be extinguished by the liability of the contractor to the principal for breach of the promise to keep to the construction program.

It is possible that at the time the contract is made, the contractor is aware that the principal will be relying on the construction program to co-ordinate the work of separate contractors and that if the contractor fails to keep to the construction program the separate contractors may be delayed and the principal may be liable to them for delay costs. In that event, the breach of the contractor of the obligation to keep to the construction program could give rise to substantial damages. The principle of remoteness of damage and the second rule in *Hadley v. Baxendale* would need to be considered in this context. This is discussed in Chapter 17, section 17.7.

A written construction program is information. As with any information provided by one person to another, there is a risk of liability if the person providing the information is aware that the person receiving the information will be relying on its accuracy. If the information is incorrect, liability can arise outside the terms of the contract and even to persons who are not parties to the contract. Therefore, anyone preparing a construction program would be well advised to include in it appropriate warnings about the accuracy of the information and the reliance that can be put on it.

Sometimes the purpose of the construction program is to assist the principal in predicting cash flow and when moneys will be required to meet progress payments. It is not uncommon to have a separate program of expected cash flows. There are contracts in which the maximum amount which the principal can be called on to pay in any month or other specified period by way of progress payments is limited to a specific ceiling.

Sometimes a contractor will produce an over-optimistic proposed construction program with a view to setting up a claim for additional overhead on account of delays allegedly caused by the principal. The proposed construction program is not evidence of the rate of progress that could have been achieved but for a delay.

It only represents an opinion and it may not even be admissible as evidence in any litigation or arbitration.

‘Approval’ of a construction program is a frequent source of conflict. Some contracts require the contractor to submit a construction program for approval. But those contracts never seem to deal with what rights the contractor has if the contractor must change the proposed sequence of work in order to have the construction program approved. The change in sequence of work could involve additional cost.

16.3

INTERPRETATION OF CONSTRUCTION PROGRAMS

Construction programs generally show the sequence and timing of individual activities in the project. They can be prepared as ‘time schedules’ (the timing of activities only is considered while the availability and the use of resources is generally disregarded) or ‘resource schedules’ (available resources have been apportioned into individual activities and thus built into the program).

In ‘time schedules’ some activities are crucial in terms of time and some are not (such activities have ‘float’). Most forms of contract provide that a delay caused by the principal will give rise to a time extension if the delay affects a crucial activity. If the delay affects a non-crucial activity, no time extension would be granted.

In ‘resource schedules’ all the activities are crucial in terms of available resources. It means that the required resources have been committed to all the activities, locking such activities into fixed time durations. Delay in any of the activities would result in the schedule becoming unbalanced, giving rise to a claim for a time extension, if the available resources cannot be readjusted and no additional resources are available, or a claim for cost, if additional resources must be engaged, or for both the time and cost when the project is delayed even after the injection of the additional resources.

If a construction program is required to become part of the contract, the form in which the program is to be prepared should be specifically stated (including whether time or resource schedule) in the tender documents.

Contractors usually understand and are able to interpret intricacies of their own critical path programs, while most principals and design consultants do not. Calling for such programs to become contractual documents may be to the disadvantage of the principal.

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PART 3

POST-CONSTRUCTION
CONTRACT
ADMINISTRATION

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CONTRACT DISPUTES

17.1

INTRODUCTION

Claims by the contractor against the principal for additional recompense may go beyond the normal claims expected in a contract. Variations and limited delay cost claims can be handled under appropriate contract clauses, but major claims may occur due to:

- 1 differences of opinion as to what is required (poor specification)
- 2 additional expenses to the contractor caused by a matter the contractor claims could not have been foreseen (e.g. a latent condition)
- 3 disruption to or prolongation of the work by the principal
- 4 misleading or deceptive conduct (breach of s. 52 of the Trade Practices Act or the equivalent section of the Fair Trading Act of a particular State)
- 5 variations to which agreement on price and time cannot be reached
- 6 differences of opinion as to whether work has been omitted or is defective
- 7 differences of opinion as to the amount of liquidated damages imposed
- 8 work outside the contract (claims for restitution based on unjust enrichment)
- 9 'try-ons' (claims with no real substance caused by losses, a low tender, or bad administration).

Ex-gratia claims, for costs not recoverable under specific contract conditions or otherwise, depend on the principal's goodwill only.

Claims often involve large sums, are complex (requiring interpretation of contract terms or valuation of many items of work and many heads of damage) and are submitted late in the contract period. Negotiations between the parties are often protracted and complicated and can lead to arbitration or litigation of disputed claims. Where settlement finally occurs that settlement is often for a fraction of the amount claimed.

Additional causes of costs which may not be covered under the contract include:

- strikes or selective work bans
- weather conditions
- public holidays
- unavailability or delay in obtaining labour or materials
- vandalism and accidents not covered by insurance
- mistakes and poor workmanship by the contractor's own employees
- breaches of contract and delays caused by consultants, subcontractors and suppliers
- poor design that is difficult to assess
- delays by or restrictions imposed by public authorities
- injunctions by neighbours or others
- financial difficulties of the contractor, major subcontractor or principal.

17.2

CONTRACTUAL NOTICE PROVISIONS

Phrases such as 'within a reasonable time' or 'as soon as practicable' often appear in standard form documents. These expressions do not mean that a contractor, principal or superintendent has unlimited time in which to give an appropriate notice or certificate simply because a specific number of days is not mentioned. On the contrary, it may be arguable that 'within a reasonable time' may in fact mean, in certain circumstances, something less than a period of, say, seven days. On the other hand, a reasonable time may be found to be a period of several weeks or even months in other circumstances.

The importance of complying with notice provisions can be demonstrated by the fact that one of the very first questions a lawyer will ask when consulted for advice in relation to the prosecution of a claim will almost certainly be, 'Have you complied with the notice provisions of the contract?'

In starting new projects, contractors often feel in somewhat of a dilemma in relation to complying with notice provisions. On the one hand there will exist in the contractor's project team a natural and healthy desire to establish the best possible working relationship with the architect or superintendent, consultants and other team members. On the other hand, events may occur early in the contract period which may require the contractor, under a specific provision of the contract, to start lodging certain formal notices.

Where a contractor, concerned to protect the contractor's position, begins to issue a stream of formal notifications, architects and superintendents are likely, not unexpectedly, to react defensively and become convinced that the contractor is preparing to make a claim. Unfortunately, none of this is conducive to maintaining the harmonious relationship between the parties that is desperately needed to have a project proceed smoothly.

17.3

COMMON SOURCES OF CONTRACTOR'S CLAIMS

Contract claims can arise from numerous sources and causes. A contractor may or may not be entitled to claim for and recover costs, losses, expenses or damages, for certain causes depending entirely on the particular terms and conditions of the contract entered into.

Some examples of causes giving rise to claims by contractors are listed below (Thyer 1985):

17.3.1 Documentation

- late issue of drawings
- inadequate information on, or errors and/or inconsistencies contained in drawings
- frequent reissue of drawings
- disputes relating to the precedence of documents where inconsistencies arise
- failure to clearly identify and execute contract documentation.

17.3.2 The site

- late or insufficient possession of site
- incorrectly set out information provided by principal
- disputes with adjoining principals (injunctions etc.)
- changed site conditions (misrepresented or unexpected).

17.3.3 Execution of works

- imposed changes on contractor's construction methods
- changes relating to the requirements of statutory authorities
- defective workmanship or materials.

17.3.4 Subcontracting

- late nomination of nominated subcontracts
- default by nominated subcontractors.

17.3.5 Time

- changes in the order and sequence of the works

- delays caused by the principal or the principal's agents
- delays caused by weather, industrial disputation or other causes outside the contractor's control
- accelerated completion
- loss of productivity.

17.3.6 Payment and adjustments of contract sum

- variations, including whether or not an item is a variation and disputes over quantum and value of variations
- delayed completion
- adjustments to measured quantities and/or relevant applicable rates
- late of 'under-certification' of progress payments by architect or superintendent
- late payment by principal
- inconsistencies in interpretation of cost adjustment formulas
- deduction of liquidated and ascertained damages by the principal.

17.4

TYPES OF CLAIMS

Lawyers categorise the types of claims that arise from construction contracts as:

- 1 claims under the contract (claims arising under a specific provision of the contract giving an entitlement to claim, for example for extra costs arising from a direction of the superintendent to vary the work)
- 2 claims for breach of contract
- 3 claims in tort (e.g. for negligence including professional negligence)
- 4 claims under statute (e.g. for misleading advice; s. 52 of the *Trade Practices Act 1974*)
- 5 claims to restitution based on unjust enrichment.

It is important to categorise the claim properly. For example, assume that the contractor has been misled by a soil investigation report provided by the principal for the information of tenderers. If the contract includes a latent condition clause, the contractor may decide to make a claim under the contract (category 1). In that event the contract will have a clause covering the contractor's entitlement.

On the other hand, the contractor may consider that the latent condition clause does not provide sufficient recompense. It might not cover loss of profit and the misleading report might have caused the contractor to lose profit that might otherwise have been earned. The contractor might consider a claim in tort based on alleged negligently misleading advice. It is often difficult to

establish negligence, so the contractor may elect to sue under statute, namely for breach of s. 52 of the *Trade Practices Act 1974*. That Act provides recompense in some circumstances even though the misleading advice was not provided negligently.

There will usually be different time bars provided for each category of action. For example, the contract might provide that any claim under the contract must be made within 28 days after the event giving rise to the claim occurs. The *Trade Practices Act 1974* (and the Fair Trading Act of each State) has a time bar of three years, but an action in tort in New South Wales can be brought up to six years after the damage is suffered. Different time bars may apply in different States.

A claim based on a latent condition clause or in tort could be defeated by an exclusion clause, but it is not possible to avoid liability under the Trade Practices Act (or the Fair Trading Act of each State) for misleading advice. The correct legal categorisation of a claim can mean the difference between success and failure.

A contractor may also seek to recover costs associated with subcontracting. For example, a subcontractor may make claims against the contractor on account of events for which the principal is responsible. Delay costs and variations are the common examples.

In order for a contract-based claim to succeed, all procedures set down in the contract must be followed. Particular attention must be paid to 'time bar' clauses to ensure that proper notices are submitted at appropriate times. A legitimate claim may be lost if contract administration procedures are not followed.

Contractors frequently confuse extension of time claims and claims for recompense for delay. The two are entirely different. If a contractor is delayed, the delay will usually cause loss to the contractor. Whether the contractor is entitled to an extension of time or not, the contractor will usually have some additional costs as a consequence of the delay. The extension of time may extinguish a liability for liquidated damages but it will not recompense the contractor for the costs incurred as a consequence of the delay.

The granting of an extension of time will not cause the contractor extra cost. Therefore it is misconceived to consider that every grant of an extension of time is a potential source of a claim for extra cost. Only in rare instances is there a contractual right to recompense that is tied to an extension of time.

Whenever the contractor is delayed, the contractor must examine the cause of the delay and consider whether there is any entitlement to recompense. Sometimes the cause of the delay will

be an event for which the contract specifically provides recompense (e.g. a variation), in which event the recompense must be claimed under the contract and following the procedure in the contract.

Sometimes the cause of delay will be a breach of contract by the principal (e.g. failure to make the site available). In that event the contractor is entitled to damages. The measure of damages will usually not be the same as the measure of recompense provided under the contract for the kind of event described in the preceding paragraph. Rarely do contracts specifically mention damages for breach of contract. Clause 42.1 of AS2124-1986 is an exception. It requires the contractor to include in progress claims any claim for damages for breach of contract.

Strictly speaking, there is no such thing as an 'acceleration claim'. The law does not recognise an 'acceleration claim'. The term is usually applied by non-lawyers to a claim for damages for breach of contract where the damages claimed are the additional cost (e.g. of paying workers overtime) to make up for acts or omissions of the principal which have delayed the contractor. Work may be accelerated:

- under instruction
- to avoid actual or expected delays.

To recover acceleration costs, the contractor must be able to point to a provision of the contract that provides specifically for recompense or to a breach of contract by the principal.

Strictly speaking, there is no such thing as a 'variation claim'. Sometimes contractors claim a 'variation' or make a 'variation claim' when what they are claiming is an amount which, under a term of the contract, is payable on account of the contractor's compliance with an instruction from the principal or the superintendent to make a change. The claim must be based on an instruction by the superintendent or the principal. An instruction to vary the work is not a breach of contract (an exception may be where the instruction amounts to a repudiation). Hence the contractor must look to a provision of the contract for recompense.

Contractors frequently make the mistake of agreeing on a price for a variation and subsequently claiming extra on account of 'indirect' consequences, for example delay. There is usually no basis for a claim except the claim that has been extinguished by the agreement on the price for the variation.

Any agreement on a price for a variation should take into account all consequences (indirect or otherwise) of the variation.

17.5

CLAIMS PREPARATION

One should anticipate that a claim could be made that could result in litigation. With that in mind, substantiating evidence for the claim should be collected and preliminary legal advice should be sought before starting the claim. It should be borne in mind that the claimant's duty is to mitigate damage. A claimant must take reasonable steps to minimise the loss the claimant will suffer.

Good and proper records should be kept throughout the contract to substantiate a claim.

17.6

QUANTIFYING A CLAIM

The largest and easiest to prove part of a claim is usually for direct costs, namely labour, plant hire and materials. There are various other heads of claim, as follows.

17.6.1 On-site costs

On-site costs are specific to a project, for example:

- supervision
- security
- telephone, electricity and water
- council fees (e.g. for hoarding or use of pavement)
- bank charges (e.g. for bank guarantee)
- insurance
- site accommodation
- temporary services
- safety
- plant and equipment
- scaffolding and fencing
- cleaning.

17.6.2 Loss of productivity

Loss of productivity could be related to disruption to the planned order of work or use of resources due to delays, variations, out-of-sequence work or industrial disruption. Productivity losses due to the 'loss of the learning curve' are often claimed but are notoriously difficult to prove.

17.6.3 Subcontract costs

Where a contractor subcontracts work, a major element of the contractor's claim against the principal is likely to be for reimbursement of amounts payable to subcontractors. Those amounts may be amounts due under the terms of the subcontract (e.g. for variations) or damages for breach of the subcontract (e.g. for delay).

17.6.4 Loss of profit or profit-earning capacity

Loss of profit may be recoverable if the contractor can establish that the contractor could have earned a profit elsewhere if, but for a breach of contract by the principal, the work had not been delayed. However, larger contractors tender for work and usually do not cease tendering on account of a delay on one project. They usually have most of their work carried out by subcontractors and a delay on one project does not prevent them undertaking another. To be recoverable, the possibility of loss of profit (if the project is delayed) must also have been foreseeable to the principal at the time of letting the contract. Claimants should beware of 'double dipping' — claiming loss of profit twice. These claims are often calculated in the same way as off-site overhead costs.

17.6.5 Off-site overheads

Off-site overheads can include:

- office staff salaries
- office rental, depreciation, interest
- telephone, computer, power costs
- sales, advertising and marketing costs
- director's fees
- clerical salaries
- accounting and auditing fees
- legal fees
- other corporate costs.

These are not attributable to a particular project and are usually expressed as a percentage of annual turnover. They can be ascertained from company accounts. It is frequently claimed that they can be quantified by means of formulae, for example Hudson or Eichleay formulae. The most difficult aspect of the off-site overhead claim is to prove actual loss. Off-site overhead costs are usually unaffected by a delay on a particular project. For example, assume that a contract is let on 1 January 2001 and the time for completion is six months. If the contract is extended to nine

months, will the contractor's off-site overheads for the financial year July 2000 to June 2001 be increased? Will the off-site overheads for the next financial year be increased? Normally they would be unaffected by the delay.

(a) Hudson Formula

$$\text{OSO} = \frac{X}{100} \times \frac{C}{P} \times \frac{D}{1}$$

where:

OSO = off-site overheads

C = contract sum

P = contract period in working days

D = period of delay in working days

X = overhead percentage, may include overhead and profit

The use of the Hudson formula has not been accepted by the courts but it is sometimes used by arbitrators. A detailed discussion on its use is presented in section 17.10.

(b) Eichleay Formula

The Eichleay formula is used in the USA for calculating the off-site overheads. This formula calculates the daily amount of overheads the contractor would have theoretically charged had there been no delay.

Required overhead contribution from delayed contract

$$\text{Overhead contribution} = \frac{\text{Contract value of work Completed in contract period}}{\text{Contract value of work completed in period (all contracts)}} \times \text{Total fixed overhead}$$

Delayed overhead contribution

$$\text{Overhead contribution} = \frac{\text{Required overhead contribution from delayed contract}}{\text{Contract period (working days)}}$$

The total amount claimed

$$\text{Amount claimed} = \text{Daily overhead contribution} \times \text{Number of days delay}$$

17.6.6 Other claimable items

Other claimable items include finance charges, which continue until the claim is settled, off-site storage costs and preparation of claim costs. The last are usually not separately recoverable but are part of overheads. Once arbitration or litigation is begun, these costs may form part of the costs recoverable by the successful party.

17.7

DAMAGES

The purpose of this section is to outline some of the principles applicable to the recovery of compensation in the context of building contracts. The first step is to identify the claimant and the person against whom the claim is made, namely the defendant. The next step is to identify the basis of the claim. The claim can have a basis in law or it can not.

In the latter event, the claimant may pursue the claim by an entreaty to fairness. For example, if the defendant is a public authority, a plea may be made to the appropriate minister or ombudsman. If the claim is in respect of an administrative decision by a Commonwealth authority, it may be that a claim can be pursued in the Administrative Appeals Tribunal. It may be that the defendant will agree to the claim being referred to an arbitrator to whom the parties by agreement give power to decide the claim according to the arbitrator's concept of fairness, irrespective of whether the claimant has a valid claim in law. Unless the parties specifically give an arbitrator power to decide according to the arbitrator's concept of fairness, an arbitrator must decide the rights of the parties according to law (s. 22(1) *Commercial Arbitration Act 1984* [NSW] and the equivalent section of the Commercial Arbitration Act of other States).

There can be many circumstances where the actions of one person cause loss to the other but there is no remedy in law. The building of a highway or airport in the vicinity of the claimant's land can cause economic loss, but if the claimant's land is not resumed, then generally the claimant has no legal remedy. A little store may become bankrupt when a supermarket opens next door. The bankruptcy of the little store may be a foreseeable and even intended consequence of the opening of the supermarket, but generally there is no right to compensation. The operator of the supermarket has not committed a wrong for which the law provides a remedy.

When one party breaches a contract, the law provides a remedy. In the absence of a contract, if the actions of the defendant cause physical injury to the claimant or physical damage to the claimant's property, the law is likely to provide a remedy. The remedy will probably be said to arise 'in tort'. Broadly speaking, torts are wrongs, other than breaches of contract, for which the courts will recognise a right to damages. There is no neat written code that sets down the rights of a claimant in tort. If in a similar case in the past courts have awarded damages for the type of wrong done by the defendant to the claimant, it is likely that a court will do so again. If in the past the courts have not awarded damages for the particular type of wrong, it is unlikely that a court will do so in the future. Tort law is judge-made law. From time to time judges extend the ambit of the wrongs that they decide are to be torts and that therefore justify an award of damages.

The tort most frequently giving rise to claims is the tort of negligence. If the contractor is negligent and thereby causes the claimant physical injury or damages the claimant's property, the claimant will usually have an action in tort against the contractor. This action arises independently of the existence of any contract. So far as concerns damage to the building being built by the contractor, there is an important qualification (see section 17.9).

A statute may give a claimant a right to limited or complete compensation. The right may be irrespective of breach of contract or tort. The workers' compensation insurance legislation in each State and Territory is an example. The Commonwealth *Trade Practices Act 1974* and the Fair Trading Acts of each State are also examples.

If the claimant has no right to compensation for breach of contract, or in tort or under a statute, the remaining possibility is an action for restitution based on unjust enrichment (see section 17.8).

Where the claimant has several possible legal remedies, an action can sometimes be brought claiming under each of contract, tort, statute and unjust enrichment, in the alternative. The claimant cannot obtain double compensation and must be careful to consider which cause of action will give the greater compensation. The claimant may have to make an election between one cause of action and another. Where the action is for a remedy under statute, the statute may prescribe the quantum of compensation. Where the action is under common law (i.e. for breach of contract, in tort or for restitution based on unjust enrichment) there are three categories of damages to consider:

- 1 expectation loss
- 2 reliance loss
- 3 restitution.

It is only for breach of contract that a claimant can recover expectation loss, reliance loss or restitution. A claim for breach of contract is usually the claim that will give the maximum compensation. In tort only reliance loss is recoverable. In a claim based on unjust enrichment, only restitution is recoverable.

An example may show the difference. Assume that a tenderer is sent a letter of intent with respect to a contract for \$10 million. A letter of intent is usually ambiguous. The claimant may claim that a contract was created by the letter. If the court finds that a contract was created and that before the contractor did any work or incurred any expenditure, the principal refused to continue with the contract, the contractor is entitled to recover as damages for breach of contract the profit that the contractor could reasonably have expected to make from performance of the contract. This is expectation loss. It could be that the contract included a 10 per cent profit. The expectation loss would be \$1 million.

Now take the case where the claimant cannot prove that a contract was created and makes a claim in tort. It may be that the principal negligently advised the contractor that the contract would be awarded to the contractor, but the contract is never in fact awarded. The contractor can only recover as damages whatever loss was incurred by relying on the negligent advice. If the contractor incurs no expense between the time of the receipt of the wrong advice and the time the contractor is notified that the contractor does not have the contract, no damages are recoverable. In that event, there is no reliance loss.

Now take the case where the claim is based on unjust enrichment. It may be that the principal intended that on receipt of the letter of intent, the contractor would start work. If the contractor cannot prove that a contract exists or that the principal was negligent, it may be that the contractor can demonstrate that the contractor did work at the request of the principal, that the work was of value to the principal and that it would be unjust for the principal to retain the value without paying the contractor. In a claim based on unjust enrichment, the court might order that the principal pay the contractor an amount equal to the amount by which the principal has been enriched. It can be seen that there are three possible measures of recompense depending on which cause of action succeeds.

There are other common law principles that constrain a claimant's entitlement. One is 'mitigation'. If the defendant can show that by taking some step that it was reasonable to take the claimant could have minimised the damage suffered, the courts will only award the claimant as much of the damages as could not reasonably have been avoided. For example, assume that in breach of contract the principal is late in providing information and that causes delay to the contractor. The contractor must take all reasonable steps to minimise the delay costs that the contractor will incur. If the contractor can engage the workers on other work, the contractor should do so. The principal would only be liable for such delay costs as the contractor could not reasonably have avoided.

Another principle is 'remoteness'. It is not necessarily enough for the claimant to show that a breach of contract is the effective cause of loss to the defendant. For example, a breach by the principal of a contract for \$1 million worth of work may mean that the contractor is delayed in finishing the contract. It may be that because the contractor is still tied up on that contract, the contractor is not able to undertake what would be another particularly lucrative contract for \$100 million, which would render a profit of \$10 million. Generally, the law does not make the defendant liable for such loss even though it is caused by the defendant. The reason can be found in policy established by judges in past cases.

The leading case is *Hadley v. Baxendale* [1854] 9 Ex. 341. That case held that where a defendant breaches a contract, the claimant is entitled to such damages as:

- 1 may fairly and reasonably be considered as arising naturally, that is according to the usual course of things, from such breach of contract itself
- 2 may reasonably be supposed to have been in the contemplation of both parties, at the time they made the contract, as the probable result of breach of it.

It is often said that 1 is the first rule in *Hadley v. Baxendale* and 2 is the second rule in *Hadley v. Baxendale*. Damage that does not fall within the first or second rule is said to be too remote to be recoverable.

In the above example, it could be said that in the event of a breach of contract by the principal which delays the contractor, the additional expenditure by the contractor on labour and overheads during the period of the delay is damage arising in the usual course of things from such breach of contract. The loss of the opportunity to undertake the particularly lucrative contract was

not damage that arises according to the usual course of things. It is damage that is peculiar to the particular contractor and the particular circumstances. It was not damage that was in the contemplation of both parties at the time of entering the contract. Therefore it is too remote. It is not recoverable.

Assume that before making the contract for \$1 million, the contractor had warned the principal that delay by the principal could prevent the contractor from entering the particularly lucrative contract for \$100 million and could give rise to a claim by the contractor for damages of \$10 million. The principal might decide not to take the risk of entering the contract. However, if after this warning the principal proceeded to enter the contract for \$1 million, then it could be said that the damages of \$10 million 'may reasonably be supposed to have been in the contemplation of both parties, at the time they made the contract, as the probable result of breach of it' (the second rule in *Hadley v. Baxendale*) and would not be too remote.

Frequently contractors make 'ambit' or 'global' claims. A typical ambit claim is one in which the principal on a number of separate occasions breached the contract and delayed the contractor and as a consequence of the cumulative effect of the individual delays, the contractor was delayed for a specific period, say 30 days, in achieving practical completion. The contractor frequently does not have the information and records necessary to determine precisely what delay and what damage was caused by each separate breach, so the contractor lumps together the various claims and claims one lump-sum amount as damages.

The defendant is entitled to have particulars of each separate alleged breach of contract, the date of each alleged breach, the act or omission alleged to constitute each breach, the delay alleged to have been caused by each breach, and the damage alleged to have been caused by each breach. In *Wharf Properties v. Eric Cumine* [1991] 52 BuildLR 8 (see Davenport 1991d), the House of Lords in England rejected a claim by the contractor that an ambit claim is valid (see Byrne 1995).

Often defendants fail to insist on their right to full particulars and frequently arbitrators deny defendants the right to full particulars. However, that is not to say that the right does not exist and cannot be enforced just as it was in the *Wharf Properties* case. In that case, when the plaintiff was unable to provide full particulars, the court refused to allow the plaintiff to continue with the case. A contractor who pursues an ambit claim risks having the claim struck out before the hearing begins.

The lesson to be learnt is that whenever the contractor considers that a particular act or omission of the principal is a breach of contract, the contractor must note and document the particular damage caused by that particular act or omission.

Consider now the principal's rights against the contractor for damages for breach of contract. Rights existing outside the contract are discussed in section 17.9. The right to damages for delay is usually covered by a liquidated damages clause. A discussion of liquidated damages is to be found in the analysis of AS2124-1986 cl. 35.6. The most common claim after that of delay by the contractor is that of defective work.

Defective work is work that is not in accordance with the requirements of the contract. The particular requirement breached may be expressly stated in the specification. Alternatively, it might be a term implied by law that the work will be done in a reasonably workmanlike manner. If the contractor fails or refuses to rectify the defect, the principal is entitled to damages. There are two different ways of quantifying the damage. One is the cost of making good the defect. The other is the diminution in value of the building as a consequence of the defect.

Take the case where the specification requires a house to be painted with green and purple stripes but the contractor breaches the contract and paints it all white. The house may actually be more attractive and more valuable painted all white. The contractor's breach of contract has caused no diminution in value of the works. If the principal actually repaints the house with purple and white stripes then the principal is entitled to the cost of making good the contractor's breach of contract. But if the principal shows no intention of repainting the house, the court might adopt the other method of valuing the principal's loss, namely the diminution in value. Since there is no diminution in value, the principal could prove only a breach of contract but no damages. In such an event, the court would award 'nominal damages' of perhaps \$1.

Sometimes the cost of rectifying a defect may be out of all proportion to the loss that the defect causes. Take the case where when a high-rise building is finished, it is found to encroach 100 millimetres over the boundary. The cost of moving the building may be \$100 million. The contractor may elect to breach the contract by refusing to rectify the defect. The principal has an obligation to mitigate damages. It would be quite unreasonable to move the building if the principal can under the Encroachment of

Buildings Act compel the adjacent principal to sell the portion of the land on which the building encroaches. The principal's damages might be limited to the cost of acquiring the portion of the adjacent land on which the building stands.

Now let us look at valuing work for progress payment purposes. Assume that the contract price for a building is \$100 000 and that the building is complete except that there is a defect in the paintwork and it will have to be scraped back and repainted. Assume that in the bill of quantities an amount of \$10 000 has been allowed for painting but the superintendent is of the opinion that to have someone else do the repainting will cost \$20 000. The value of the work that has been done is \$80 000. This would be the amount of the progress certificate and retention moneys would be calculated on \$80 000. It would be an error to value work at \$90 000 or \$100 000 and deduct retention from that amount and then deduct \$10 000 or \$20 000, representing the cost of making good the breach.

17.8

UNJUST ENRICHMENT

It was not until the High Court decision in *Pavey & Matthews v. Paul* [1987] 61 ALJR 151 that the remedy of restitution based on unjust enrichment was generally recognised to be part of the law. For this reason it is often not mentioned in older textbooks and was not raised in many cases where it could have provided a remedy.

There is no general principle of law in Australia that requires contracts to be just or reasonable or that entitles a person exploited to recover compensation. There is some legislation to protect consumers, but generally a contractor has no remedy if the contract price is so low as to be unprofitable or the conditions of contract impose an unreasonable obligation.

Unjust enrichment has nothing to do with contracts. If there is a contract covering the matter, unjust enrichment does not apply. The law does not consider it 'unjust' that a contract imposes a burden that may seem unjust to the layman. There may be ways of getting out of a contract, but while there is an enforceable contract covering the rights of the parties, unjust enrichment has no application.

The classic example is in the *Pavey & Matthews* case. In that case the contractor built a house for the principal but the contractor had only an oral contract. The contractor claimed that the

principal refused to pay the agreed price. Legislation (now the *Home Building Act 1989* [NSW]) provided that a contractor could not enforce a contract unless it was in writing. Therefore it was useless for the contractor to sue under the oral contract. The situation then existing was:

- 1 The principal was enriched by the fact that the principal now had a valuable house.
- 2 The work had been carried out by the contractor at the request of the principal.
- 3 The enrichment was therefore at the expense of the contractor.
- 4 The enrichment was not intended to be gratuitous.
- 5 The contractor had no contractual right to payment.
- 6 It would be unjust for the principal to keep the benefit (the enrichment).

The High Court invoked the doctrine of unjust enrichment. The court decided that the principal had been unjustly enriched. The remedy in the case of unjust enrichment is not damages (as is the case of breach of contract or of tort) but to give the contractor an award of money equal to the amount by which the principal is enriched. This award is said to be 'restitution', a restoring to the claimant of the enrichment unjustly obtained by the defendant. Hence the claim is a claim 'for restitution based on unjust enrichment'.

The claim for restitution is frequently called a quantum meruit claim. Quantum meruit is used to describe both:

- 1 a 'reasonable price' to the contractor for work carried out
- 2 the amount that represents the unjust enrichment.

The two will not always be the same. One is looking at the cost to the contractor. The other is looking at the benefit received by the principal. Unjust enrichment is only concerned with the benefit received.

There is a theory that if the principal repudiates a contract and the contractor accepts the repudiation and terminates the contract, the contractor can elect to sue for damages for breach of contract or for a quantum meruit. In such cases it is argued that a quantum meruit is a reasonable price to the contractor for the work carried out. The second course is frequently pursued where the contractor's contract is unprofitable. The nature of the quantum meruit claim needs to be reviewed in the light of the recent recognition of the true nature of unjust enrichment. These issues are discussed in a greater depth in Davenport & Harris (1997) and Davenport (1989c).

The claim for restitution based on unjust enrichment can provide recompense for a contractor where work is carried out at the request (express or implied) of the principal and there is no right for payment under the contract. For example, the contract might provide that only variations directed in writing by the superintendent qualify for payment. In that event, if the principal, or the superintendent on the principal's behalf, asks the contractor to do some extra work and the principal refuses to pay because the direction was not in writing, the contractor may say:

This work was not work under the contract. I am not claiming payment under the contract. I did this work at the request of the principal. It was not intended to be gratuitous. The principal has received a benefit and it would be unjust if the principal were to retain the benefit without paying me for the work. Therefore my claim is for restitution based on the doctrine of unjust enrichment.

There are numerous cases where contractors have endeavoured to recover recompense under a contract where the contract provides that the principal will only be liable to pay for variations that were directed in writing. It appears that all the reported cases predate the recognition of the remedy based on unjust enrichment. It is important to recognise that the claim based on unjust enrichment is not based on a contract at all but on the absence of a contract covering the particular work.

Because a claim for restitution based on unjust enrichment is not a claim under a contract, it is not within the usual arbitration clause. Therefore, if the respondent raises the objection, the claim may have to be pursued in a court rather than in arbitration (see Davenport 1990, 1996b).

An important use of the claim for restitution claim based on unjust enrichment is where a contract is frustrated but work continues. For example, in the case *Codelfa v. SRA* [1982] 149 CLR 337, the contract for Sydney's Eastern Suburbs Railway Tunnel was found to be frustrated when a court injunction prevented the contractor from working three shifts a day. After the injunction, work continued. Under the doctrine of frustration, however, once a contract is frustrated it is at an end. Therefore the contractor could not recover under the contract for work done on the tunnel after the court ordered the injunction. The principal received the value of the tunnel and it would be unjust if the principal did not recompense the contractor. The contractor's entitlement to recompense is based on the doctrine of unjust enrichment.

Another example of the possible use of the doctrine is where

the principal or superintendent refuses to order a variation to overcome some obstacle, for example a defect in the design or a latent site condition. Assume that it is impossible to continue the work specified until the obstacle is overcome. An example may be where the principal has provided a design for the footings of a building but the subsoil conditions prove to be such that the design of the footings must be amended or the building will be unstable.

The contractor cannot lawfully be required to build a structure that will be dangerously unstable. The contractor may decide not to continue or may decide to do work outside the contract. The contract requires footings in accordance with the design. For the contractor to construct different footings is to do work outside the contract. Assume that to overcome the impasse, the contractor does work outside the contract by redesigning the footings and constructing them to a safe design.

The principal will have the benefit of the work outside the contract. That work may have been expressly authorised or authority to do that work could be implied from the circumstances, namely the expectation of the principal that it is the contractor's responsibility to solve the problem. The circumstances indicate that it was not intended by the parties that the extra work would be a gift to the principal.

Since the work is outside the contract, the contractor could pursue a claim for restitution based on unjust enrichment. It would be unjust if the principal could have the benefit of the extra work without paying for it.

The paucity of reported cases illustrating recovery based on unjust enrichment reflects the fact that the doctrine was not generally recognised in Australia until 1987. Many involved in the construction industry still do not understand the doctrine and omit considering the possibility of a claim for restitution based on unjust enrichment, whenever:

- 1 the contractor has done work that the contractor was not required to perform under the contract
- 2 the contractor has no right under the contract to payment for the work
- 3 the principal has received the benefit of the work.

It is possible that a claim for restitution based on unjust enrichment may be available to the contractor.

Because a claim for restitution based on unjust enrichment is not made under a contract, time bars and other limitations under the contract may not apply. For example, a contract may provide

that the principal will not be liable on any claim by the contractor in respect of any matter arising out of the contract unless notice of intention to make the claim has been given not later than 28 days after the occurrence of the events on which the claim is based. A claim based on unjust enrichment does not arise out of the contract. It is quite independent of the existence of a contract.

Just as it is possible for a party to contract out of liability in tort, it is possible to contract out of liability to make restitution based on unjust enrichment. But the usual exemption clauses in contracts are not adequate to avoid liability based on unjust enrichment. Generally speaking, to effectively avoid liability for restitution based on unjust enrichment, an exemption clause would have to refer specifically to claims based on unjust enrichment.

17.9

LATENT DEFECTS AND ECONOMIC LOSS

Assume that an architect is careless in the design of the footings of a building, with the result that it will suffer subsidence. The architect will be liable to the person with whom the architect contracted. The liability will be for damages for breach of the express or implied term in the contract to do the design in a reasonably skilful manner. The damages will be the cost of repairs or the diminution in value of the building as a consequence of the defect in the footings.

Under the *Limitation Act 1969* (NSW), an action for breach of the contract must be commenced within six years (12 years when the contract is a deed) after the breach occurs. Now assume that the defect is not discovered until after the end of the six years. The principal will be barred from bringing an action for breach of contract. The owner will be concerned to discover if an action can be brought otherwise than for breach of contract. The other possibility is an action in tort, that is, based on breach of a duty of care, which the law says exists independently of a contract.

Now assume that the owner has sold the building before the defect is discovered. The owner will have suffered no loss as a consequence of the defect, but the new owner will suffer loss when the defect is discovered. The new owner has no contract with the architect. Hence the new owner will also be concerned to discover if an action can be brought in tort.

Now assume that the design was satisfactory but the contractor

departed from the design and built defective footings. The contractor's liability, if any, in tort will be governed by the same principles as the liability of the architect.

If the building or part collapses and injures someone, then the injured person will probably have an action in tort against the negligent architect (*Voli v. Inglewood* [1963] 110 CLR 74) or negligent contractor. Under the *Limitation Act 1969* (NSW), the time for bringing the action is three years from the date of the accident causing the injury, no matter how many years that may be after the work was completed.

If the building or part collapses and damages property other than the building itself, the owner of the other property will probably have an action in tort. The period for bringing the action is six years from the date of the accident causing the damage.

There is another category of damage and that is damage to the building itself. The damage may be actual, for example subsidence of the building, or latent, for example the potential for the building to subside if action is not taken to strengthen the footings. The potential for damage is commonly called a 'latent defect'. The actual damage is commonly called 'latent damage'. It is called 'latent' because it is not apparent at the time the work was carried out. If the damage is apparent at the time work is being carried out, it will be dealt with under the terms of the contract. For convenience, the term latent defect will be used to cover both a latent defect and latent damage.

The damage suffered as a consequence of a latent defect is said to be 'economic loss'. The claimant has not suffered physical injury or physical damage to other property. The claimant has suffered economic loss in that the building is worth less than the claimant believed it to be worth before the claimant discovered the latent defect.

Until 1972 it was generally believed that no liability existed in tort for a latent defect. It was believed that the only liability in tort of the architect or contractor was for personal injury or damage to other property. Then in that year in England in the case *Dutton v. Bognor Regis Urban District Council* [1972] 1 QB 373, it was held that a council was liable in tort to an owner when the council was negligent in inspecting footings.

This case caused much interest and gave rise to much litigation. It immediately raised the possibility of the architect or contractor being liable in tort for a latent defect. It was not until 1990 in *Murphy v. Brentwood District Council* [1990] 3 WLR 414 that the courts in England recognised their error and overruled the deci-

sion in *Dutton*. In England, it is now settled that an action in tort does not exist for economic loss caused by a latent defect.

In Australia the legal position remained uncertain until the High Court in *Bryan v. Maloney* [1995] 182 CLR 609 decided not to follow the revised view of the law in England but to hold a contractor liable in tort to a subsequent owner for a latent defect.

In *Bryan v. Maloney*, a contractor in Tasmania constructed a house with defective foundations. When a subsequent owner bought the house the defect was latent. Six months later, severe cracking appeared. The subsequent owner had no contract with the contractor and hence no claim in contract against the contractor. Moreover, time for commencement of an action in contract had expired. However, the subsequent owner was successful in an action in tort against the contractor.

Time for bringing an action in contract runs from the date of the breach of contract. Time for bringing an action in tort runs from the time the damage occurs. In this instance, the damage was the diminution in value of the house once the defect was discovered. It was economic loss. The owner suffered economic loss when the defect was discovered. The consequence is that a contractor can have a potential liability in tort, which continues for an indefinite period.

The reason for the contractor's liability in tort appears to be that an owner places reliance on the contractor to ensure that foundations are sound and that, as a consequence, the contractor owes a duty of care in tort to the owner. Countless articles have been written on *Bryan v. Maloney* and the implications for contractors.

The case involved a house. It is not clear to what extent the High Court's decision would apply to commercial premises. It is not clear what effect a pre-purchase inspection may have. For example, it may be that a purchaser who has a pre-purchase inspection is relying on that inspection rather than relying on the contractor. It is also uncertain what effect the terms of the construction contract may have on tort liability to a subsequent purchaser. For example, if under the construction contract the owner accepts defective work (perhaps in return for a reduction in the price) and then sells the premises without disclosing the defect, can a subsequent purchaser have a claim in tort against the contractor?

So far as concerns residential premises, the *Home Building Act 1989* (NSW) may have implications for the liability in tort of contractors. That Act has provision for insurance and for a statutory warranty that continues for seven years (s. 18E). The statutory warranty continues for the benefit of subsequent purchasers

(s. 18D). It is possible that since Parliament has decided that the warranty will only last seven years, the courts might decide that there is not a duty in tort that would be inconsistent with this time limit.

Section 18F of the *Home Building Act 1989* NSW provides:

In proceedings for a breach of a statutory warranty, it is a defence for the defendant to prove that the deficiencies of which the plaintiff complains arise from instructions given by the person for whom the work was done contrary to the advice in writing of the defendant or person who did the work.

If a contractor during residential building work has a duty in tort as well as the statutory warranty, does the contractor have a similar defence to the action in tort? This is only one of the many interesting questions arising from *Bryan v. Maloney*. The law on a contractor's liability in tort for economic loss is far from settled. Some States are imposing new statutory time limits on such liability. For example, the *Environmental Planning and Assessment Amendment Act 1997* (NSW) (s. 109ZK) introduced a time limit of '10 years after the date upon which the relevant final occupation certificate is issued'.

17.10

HUDSON FORMULA AND PREVENTION PRINCIPLE

With any general conditions of contract, the provisions that give rise to the most disputes are those that deal with time and money. Delays are frequent in the construction industry and often involve substantial cost. Therefore contractors have devised ingenious arguments for avoiding liability to the principal for liquidated or other damages for delay and for recovering additional remuneration from the principal. One of these is the 'Prevention Principle' (see Davenport 1991b) and another is the 'Hudson Formula' (see Davenport 1991c). Neither has any basis in law or logic, but that does not seem to deter contractors from raising them. They will find plenty of support in the literature of the industry but little or none in reported cases.

To assist in understanding what is to follow, take an example of a building contract that involves building ten identical houses in ten months. Assume that the contractor proposes to build the houses sequentially, one per month. Assume that at the time the contract is let, labour costs per house are \$40 000, material costs are \$40 000 per house, on-site overheads (sheds, fencing, etc.) are

\$10 000 per month and off-site overheads (insurance, head office expenses, etc.) are \$5000 per month, leaving a profit of \$5000 per house or \$50 000 in total. The contract price will be a lump sum of \$1 million or \$100 000 per house.

Assume that at the start the principal breaches the contract by being one month late in giving possession. The contractor can apply for an extension of time. The original period until the date for practical completion is ten months from the date of acceptance of the tender. If time is extended by one month, the contractor will not be liable to liquidated damages.

The contractor is entitled to damages for the breach, but what are the damages? If the contractor has advance notice of the delay and can keep the workers fully engaged on another project, there may be no damages. Since the contractor has not taken possession of the site, the on-site overheads have probably not begun. Any direct costs such as labour and on-site overheads are usually easy to prove. These costs are obviously damages flowing from the delay. The question is whether the contractor is entitled to anything in respect of the contractor's off-site overheads and profit, which were 5 per cent and 5 per cent respectively.

The proponents of the Hudson Formula (or other similar formulas) would say that the one-month extension of the contract period means that the contractor is entitled to an amount for overheads and profit calculated according to the formula. This would give the contractor an amount of \$10 000 for the month's delay. This \$10 000 is irrespective of whether the contractor had actual extra labour and on-site overheads and is quite independent of the actual damages. The law does not award damages unless they have actually been incurred, and any formula that arrives at an amount that is independent of actual loss will not be recognised.

Some try to justify the use of the formula by arguing that it calculates the 'contribution to off-site overheads and profit', which the contractor is prevented from earning by being unable to earn income from another project. They usually skip over the question of whether the contractor is actually prevented from earning income and they invariably ignore the question of whether the loss of income, if any, was foreseeable within the principle of law set down in *Hadley v. Baxendale*. Most large contractors will not be prevented from undertaking any other work that is available. They can recruit more staff or subcontract. If in a particular instance the large contractor is so prevented, then it is most unlikely that the loss would have been foreseeable.

The claim is usually based on the Hudson Formula. While the book from which the formula comes (Duncan Wallace [1995] *Hudson's Building and Engineering Contracts*) is a well-known and respected text, the formula does not reflect the law. The law only recognises actual damages, not a theoretical loss.

What if the contractor decides not to apply for an extension of time? There is no obligation on the contractor to claim an extension unless failure to do so would be a failure to mitigate damages. The contractor is entitled to damages for breach of contract. The contractor might put the workers on overtime to make up for the time lost. The overtime would be what are commonly called 'acceleration costs'.

Is there a limit to the amount that is recoverable as acceleration costs? Since the acceleration costs are damages for breach of contract, the principle of mitigation applies. The question must be asked: 'what would have been the contractor's loss if the contractor had not accelerated'? If the loss would have been liquidated damages of \$1000 per day, the contractor would be limited to acceleration costs of \$1000 per day. Logic will show that in most cases the amount per day of liquidated damages is the ceiling on acceleration costs.

Now assume that the superintendent fails to grant or refuses an extension of time. Under most forms of contract, the consequence would be that the principal could not recover liquidated damages. A provision found in many Australian standard forms is:

A delay by the principal or the failure of the superintendent to grant a reasonable extension of time or to grant an extension of time within 28 days shall not cause the date for practical completion to be set at large but nothing in this paragraph shall prejudice any right of the contractor to damages.

If the failure of the superintendent to grant a reasonable extension of time is a breach of contract, then the principal would be liable to the contractor for the liquidated damages, if any, which the contractor will become liable to pay as a consequence of the superintendent's failure. Under some contracts the principal agrees to ensure that in the exercise of the functions of the superintendent under the contract, the superintendent will arrive at a reasonable measure of time. Here is a source of the liability of the principal for the failure of the superintendent to extend time.

The contractor may decide to accelerate the work rather than incur liquidated damages and where the principal is in breach on account of the superintendent's failure to extend time, the principal would be liable for the acceleration costs. Again, due to the

principle of mitigation, the amount of liquidated damages would put a ceiling on the acceleration costs that could be recovered.

Taking the example of the contract for \$1 million for the ten houses, assume that the contractor is running late and in month 11, while the contractor is incurring liquidated damages of \$1000 per day, the superintendent orders a variation that involves an extra ten days' work. There is a theory (called the 'Prevention Principle' or the 'Peak Principle') that the order causes the principal to lose the right to all liquidated damages.

A variant (also called the 'prevention principle' or the 'peak principle') is that the principal loses the right to any liquidated damages after the date of the instruction to vary the work. The argument is that the principal by the variation prevented the contractor from achieving practical completion by the date for practical completion. Obviously a variation directed after the date for practical completion cannot possibly prevent the contractor from achieving practical completion on that date. Something else has been the cause. The argument is based on a misinterpretation of *Peak v. McKinney* [1970] 1 BuildLR 111.

Neither theory is true. The contractor has agreed to build the ten houses by a certain date and any extra work ordered as a variation. The parties have agreed that if extra work is ordered, the contractor will be entitled to extra time. Some contracts provide:

If after the contractor has paid or the principal has deducted liquidated damages, the time for practical Completion is extended, the principal shall forthwith repay to the contractor any liquidated damages paid or deducted in respect of the period up to and including the new date for practical completion.

The new date for practical completion may well be a date earlier than the date on which the variation is ordered.

Rather than invoking the so-called 'prevention principle', the correct approach under any form of contract is to be found in the interpretation of the liquidated damages clause itself. Most liquidated damages clauses say: 'If the contractor fails to achieve practical completion by the due date, the contractor must pay liquidated damages', or words to that effect. The courts will interpret 'fail' to mean that there must be some blameworthy conduct on the part of the contractor. They will say that the clause is not intended to apply to failure caused by the principal (see *Peak v. McKinney* [1970] 1 BuildLR 111).

Prolongation costs (or more correctly, cost arising from delay) are recoverable in one of two situations, namely:

- 1 where the contract provides for payment (e.g. for latent conditions, directions with respect to the order of work, and suspension)
- 2 where the principal breaches the contract.

To return to the example of the ten houses to be built for \$1 million in ten months, assume that the superintendent directs that an eleventh house be built. Assume that the variation is within the scope of the contract. Assume that the direction is given at the end of the fifth month and that at the end of the seventh month there is a wage rise that increases the contractor's labour costs per house from \$40 000 to \$50 000.

If the extra house is built in month 11, a reasonable price for the house would be \$110 000, made up as follows using the prices originally postulated and adding the \$10 000 increase in labour costs:

labour	\$50 000
materials	\$40 000
on-site overheads	\$10 000
off-site overheads	\$5 000
profit	\$500

However, if the additional house is built in month 6, before the wage rise, a reasonable price for that house is \$100 000. The contractor's labour costs for house no. 7 will now be \$50 000 because it will be built after the increase whereas, had it not been for the variation, it would have been built in month 7, before the wage rise, and labour costs would have been \$40 000. Can the contractor recover the extra \$10 000 and if so, how? The variation is not a breach of contract.

Most standard forms provide that if the superintendent gave a direction, either expressly or by implication that the order of work be changed, the extra cost is recoverable. In any event, the work on houses 6 to 10 was suspended while the additional house was built and the suspension was due to an act of the superintendent, namely ordering the variation. Most standard forms provide for the principal to pay any extra cost incurred by the contractor by reason of the suspension.

Proponents of the Hudson Formula will probably demand an additional \$10 000 (over and above the additional labour costs) on the basis that time has been extended for one month on account of the variation. However, the only additional cost to which the variation puts the contractor is the wage rise with respect to house no. 7. Otherwise, the cost of building the ten houses is

exactly the same as it would have been had there been no extension of time.

The prolongation of the contract has not caused 'prolongation costs'. Even if it had, the contractor must point to a right under the contract to some additional recompense. A variation is not a breach.

Some may argue that the extension of time meant that the contractor could not undertake other work for a month. Even if that were so, there is no provision for recovery of loss of the income that might have been earned elsewhere in that month. Most contracts provide that the principal is entitled to order reasonable variations. The contractor accepts the risk that performance of the variations may prevent the contractor from undertaking other work.

17.11

FRUSTRATION

Frustration, in the context of contracts, occurs when an event prevents performance of the contract. The event must not be the fault of either party. The event terminates the contract but it need not prevent work from continuing. The contract is said to be frustrated.

If the contractor continues working after the contract is terminated by frustration, the contractor has no right under the contract to payment for the work carried out after termination of the contract. If the principal expressly or by implication requests the contractor to continue work but refuses to pay for the work, the contractor would probably have a claim for restitution based on unjust enrichment.

As far as concerns work performed before termination of the contract by frustration, if the contract makes no provision with respect to payment, in New South Wales the *Frustrated Contracts Act 1978* would apply. Some other States have similar legislation. The Act has a formula for sharing the loss incurred by the contractor and the principal. The Act does not state that the contractor must be paid for the work done. On the contrary, the contractor may be required to repay to the principal some or all of the moneys already received for work done before termination. There appears to be no reported case in which the Act has been applied to a frustrated building contract.

Only a few standard forms of contract in Australia cover the rights of the parties on frustration. Those that do usually place the

risk of frustration on the principal and provide that if the contract is frustrated, the principal must pay the contractor for work carried out before frustration plus demobilisation costs. Those contracts also protect the contractor in respect of costs incurred in expectation of completing the work but do not give the contractor any compensation for the loss of profit that might have been earned had the contract not been terminated by frustration.

The classic definition of frustration is in *Davis Contractors Ltd v. Fareham Urban District Council* [1956] A.C. 696 where Lord Radcliffe said:

[F]rustration occurs whenever the law recognises that without fault of either party a contractual obligation has become incapable of being performed because the circumstances in which performance is called for would render it a thing radically different from that which was undertaken by the contract ... It was not this that I promised to do.

The leading Australian authority is *Codelfa Construction v. SRA* [1982] 149 CLR 337. In that case the contract provided that the contractor would work three shifts a day. When, due to a court order, it became impossible to work three shifts a day, the contract was frustrated.

The fact that due to spiralling costs the contract costs more to perform is not frustration (*Wates Ltd v. Greater London Council* [1983] 25 BuildLR 1). A landslide that causes suspension of work for two years but does not prevent construction of the building is frustration (*Wong Lai Ying v. Chinachem Investment* [1979] 13 BuildLR 86). Resumption of part of the land on which the work is to be carried out is frustration (*Brisbane City Council v. Group Projects* [1979] 54 ALJR 25). Shortage of labour and materials causing delay is not frustration (*Davis Contractors v. Fareham* [1956] A.C. 696).

In *Aurel Forras v. Graham Karp* [1975] VR 202, it was held that part only of a contract cannot be frustrated. Either the whole contract is frustrated or none of it is frustrated. However, *Pioneer Shipping v. B.T.P. Tioxide* [1982] AC 724 suggests that it may be that a separable part of the contract could be frustrated without affecting the balance of the contract.

Matters which are provided for by the contract do not cause frustration. For example, most contracts provide for reinstatement of damage to the works, whether caused by fire, flood or other cause. Most contracts provide for an extension of time for delay caused by wet weather or strikes.

Sometimes those drafting contracts limit the grounds for an

extension of time for completion without giving consideration to possible consequences. A possible consequence is that a contract may be frustrated by an event beyond the control of either party which prevents the contractor from completing on time. Take the example of a contract to construct a road by 1 June 1992, where there is no provision for extension of time for causes of delay beyond the control of the contractor. If, due to a strike, it is impossible to obtain bitumen until after 1 June 1992, it would be impossible to perform the contract. It could be argued that the contract is frustrated.

Frustration of building contracts has been described as extremely rare (Duncan Wallace 1978) and very rare (May 1991), but it may be that the 'rarity' is due to the failure of lawyers to understand the doctrines of frustration and restitution based on unjust enrichment and to use them.

A possible use of frustration is where, under a contract without a latent site condition clause, a latent site condition is discovered. Take the case where a contractor agrees to construct a house to the design of the principal and in the course of construction a sewer main is discovered. It may be impossible to perform the contract until the sewer main is relocated or concreted over. Neither removal nor concreting over of the sewer main is in the contractor's contract. Often the problem will be overcome by a variation order and an extension of time, but if the principal refuses to order a variation, the contract may be frustrated.

Before the contractor raises the doctrine of frustration, the contractor must consider the consequences. If the contractor continues work, the contractor must make sure that the contractor is doing so at the principal's request. Otherwise, if the principal refuses to pay, the contractor may not be able to prove that the principal has been unjustly enriched. A contractor has two possibilities of payment for work. One is under a contract. The other is based on unjust enrichment. After frustration, there is no contract. If the principal has not requested the work, it may be very difficult to prove that it is unjust for the principal not to pay for the work.

If the contractor claims that the contract is frustrated and does not continue with the work, then only when the contract includes a clause covering rights upon frustration, can the contractor claim to be paid in full for work done. If that clause is not in the contract, the contractor must look to the *Frustrated Contracts Act 1978* (NSW) or equivalent legislation in other States. Under that Act, the contractor may have to repay some of the money already

received. One reason for the rarity of claims based on frustration is the absence from many standard forms of protection for the contractor in the event of frustration.

17.12

TERMINATION

How does a contract end? In one sense a contract never ends. A promise made may be fulfilled, but that does not mean that the promise no longer exists. It ceases to be enforceable once it has been fulfilled. When both parties have fulfilled all their respective obligations, a contract is often said to be completed, terminated, finished or at an end. For example, a contract to buy a computer may appear to be completed when the seller hands over the computer and the buyer hands over the money, but should the purchaser subsequently find that the computer is defective, the purchaser may be able to sue on the contract.

The fact that the contract is terminated does not mean that the right of either party to pursue a claim for breach has terminated. Usually, unless action in court or arbitration has been commenced within six years after a breach of contract occurs, the claim for breach is barred after six years (e.g. *Limitation Act 1969* [NSW]).

The word 'contract' is used to describe several things:

- 1 the writing or words creating the arrangement between the parties
- 2 the arrangement between the parties as first made
- 3 the arrangement between the parties as it exists at a particular time.

The writing or words creating the arrangement in 1 are not terminated. Consider a cheque. It is both a piece of paper and a direction to the bank to pay someone a certain sum of money. If a cheque is cancelled, the piece of paper remains but the instruction to the bank is terminated.

If the arrangement between the parties as first made in 2 is terminated, then the contract is said to be 'rescinded'. The termination is retrospective to the beginning of the contract. After rescission, it is as if the contract had never existed. Termination and rescission are often confused. The expression 'rescinding a contract' should be confined to the case where the contract is terminated from the beginning as if it never existed.

Termination, strictly speaking, is of the arrangement between the parties as it exists at the time of termination (in 3 above). Sometimes the expression to 'cancel' a contract is used. The term

'cancel' is ambiguous and should not be used. It could mean rescission or termination. It is not a legal term. Termination can occur by:

- 1 performance by both parties of their respective obligations
- 2 both parties agreeing to terminate
- 3 one party pursuant to a power given in the contract
- 4 one party upon the repudiation of the other party
- 5 operation of law, for example the doctrine of frustration or an order of a court under a statutory power to review contracts (usually consumer contracts or contracts for residential building work).

If a contractor has finished all the work and the principal has paid the contractor in full, the contract is at an end. There is no need for a final certificate unless the contract requires one to be issued. If the parties agree to terminate a contract, then they have made another contract that extinguishes rights under the first contract. Sometimes the agreement may be by implication from conduct rather than expressed in words. Termination by frustration is discussed in the previous section.

It is common for building contracts to include provision that one party can terminate the contract in certain events. Under many standard forms of contract there are provisions entitling one party to terminate if the other party commits certain breaches and thereafter fails to show reasonable cause to the other why the other should not terminate. There may also be provision for the principal to take part of the work out of the hands of the contractor.

If a party wishes to exercise a power to terminate given by a termination clause, the party must be careful to comply strictly with the requirements of the termination clause. Otherwise, the purported termination will be a nullity and the failure thereafter of the party purporting to terminate to fulfil that party's obligations under the contract will be a breach of contract. A defective attempt at termination is not necessarily repudiation of the contract (Davenport 1989a, 1989e).

If one party repudiates the contract, the other party may elect to terminate the contract. Repudiation by one party does not bring the contract to an end. It takes two to create a contract. Except where the contract provides that one party can terminate it, it takes two to terminate it. Upon repudiation by one party, the other party must make an election, to terminate or not to terminate. Failure, within a reasonable time after the repudiation, to give the other party notice that the first party elects to terminate the contract can amount to an election not to terminate.

Repudiation by a party to a contract is where the party refuses to perform the party's obligations or acts in such a manner as to demonstrate that the party does not mean to be bound by the contract. It may occur when a contractor abandons the work and demonstrates no intention to ever finish the work. It may occur when the principal fails to make the site available for a long time and fails to indicate when it will be available. The fact that there is a dispute does not mean that there is repudiation. If the contractor refuses to rectify defective work, the refusal, if sufficiently serious, may be repudiation, but if there is a genuine argument over whether or not the work is defective, it may be that the contractor is not refusing to perform the contractor's obligations but is merely mistaken as to what they are.

A refusal by the principal to pay in accordance with the contract for work done may be repudiation, but if there is a genuine dispute over the amount payable, it is more likely that the principal is quite willing to perform the principal's obligations and is merely mistaken as to what they are.

DISPUTE RESOLUTION

18.1

INTRODUCTION

Most construction contracts contemplate that the contractor will make claims, for example progress payment claims and claims for extension of time. Most claims do not give rise to disputes. Mere failure to pay a claim does not necessarily mean that there is a dispute. The debtor may simply be insolvent. A dispute arises when one party makes a claim against the other and the other party disputes liability either expressly or by conduct.

When a dispute arises, there are various methods by which it may be resolved. These methods fall into two categories, namely resolution by agreement or resolution by a binding decision of a third party.

18.2

RESOLUTION BY AGREEMENT

Disputes may be resolved by negotiation between the parties, or a third party may be called in to assist with negotiations. The third party may be described as a facilitator, mediator, appraiser or expert. There are various organisations, for example ACDC (the Australian Commercial Disputes Centre), LEADR and the Institute of Arbitrators and Mediators Australia, which for a fee of several hundred dollars will nominate a member to act in a non-binding capacity (e.g. as a mediator) or in a

binding capacity (e.g. as an arbitrator). The NSW Department of Fair Trading will nominate a mediator in some residential building disputes.

Experienced facilitators, mediators or expert appraisers usually require the disputing parties to sign a three-party agreement covering the terms of reference, the fees to be paid and the procedures to be followed. The agreement will probably also include a clause exempting the third party from liability.

Mediation occurs every day, in the family, the school, the office or even the pub. Everyone has seen mediation at work. It is where a third party endeavours to get others to resolve their differences amicably. But in the construction industry it has become a very formal and sometimes costly process. Countless articles and books have been written on the process (e.g. Charlton & Dewdney 1995), which appears to have been very successful in resolving disputes. However, it is most important that any agreement resulting from a mediation is carefully drafted, perhaps by a lawyer. There are many instances where a party has thought that agreement reached in mediation was the end of the dispute, only to find that the settlement agreement did not extinguish claims which the party thought were extinguished.

Claims are extinguished, in the sense that they cannot thereafter lawfully be pursued, when the claimant and the respondent to the claim reach accord (agreement) and the agreement is satisfied (satisfaction). 'Accord and satisfaction' extinguishes a claim. For example, the principal may claim that certain work is defective. The contractor may offer, instead of repairing the defect, to give the principal a reduction in the contract price of \$1000. If the principal agrees then there is accord. The contractor thereupon reduces the contractor's invoice by \$1000. There is the satisfaction. Thereafter the principal cannot claim damages for the defective work.

Now imagine that the defect was an insecure handrail on a balcony. Imagine that someone unaware of the defect leans on the handrail and it gives way, causing injury to that person. The injured person might have a claim directly against the contractor. The injured person is not bound by the agreement between the contractor and the principal. In the agreement with the principal, the contractor would have been prudent to include a provision that the principal will make the rail safe and indemnify the contractor against any claim by a third party.

A frequent occurrence is where the principal and the contractor agree on a price for a variation and later the contractor claims

‘prolongation’ of delay costs resulting from the variation. It is a matter of legal interpretation to determine whether the agreement on a price for the variation extinguished the right to make a claim for prolongation.

The methods of dispute resolution described below are final and binding. They tend to be expensive. Parties frequently engage lawyers and are concerned to cover every detail. A non-binding assessment by a third party can be faster and much cheaper. It allows both parties to air their differences and obtain an opinion from a third party without the fear that if the third party comes to a conclusion that either party considers is outrageous, the party will nevertheless be bound.

18.3

RESOLUTION BY A BINDING DECISION OF A THIRD PARTY

Mechanisms for resolving disputes by a binding decision of a third party fall into three categories:

- 1 litigation
- 2 arbitration
- 3 expert determination.

18.4

LITIGATION

Litigation is the process whereby one party commences an action in a court or statutory tribunal against the other party. In New South Wales, the Supreme Court has the broadest jurisdiction. It is unlimited in amount. The District Court is usually limited to awarding not more than \$1 million. The Local Court is usually limited to \$40 000. In residential building disputes, in some jurisdictions there are special tribunals with exclusive or parallel jurisdiction. There is also the Federal Court, which has, in monetary terms, the unlimited jurisdiction of the Supreme Court.

Generally speaking, anyone can start litigation by lodging a written claim in the appropriate court or tribunal. However, if the claimant is party to an arbitration agreement with the person being sued, who is the respondent to the claim, the respondent can apply to the court for an order ‘staying’ (stopping) the

litigation, thereby forcing the claimant to proceed by way of arbitration as agreed (see s. 53 of the *Commercial Arbitration Act 1984* [NSW]). This is a mechanism for keeping people to their agreement to submit disputes to arbitration.

However, with respect to residential building works, the relevant state legislation may bar arbitration.

In construction disputes, the Supreme Court and the District Court frequently appoint a person as 'referee' to hear the evidence and report back to the court. The 'referee' is usually not a lawyer but a person who practises as an arbitrator. The 'referee' process is almost indistinguishable from arbitration except that the final decision is made by the judge.

18.5

ARBITRATION

This is a legal process where the parties have agreed that they will have a dispute or disputes decided by a third party of their choice or, if they cannot agree, appointed by a someone for them. The process is governed by the *Commercial Arbitration Act 1984* (NSW). Once an arbitrator is appointed, the arbitrator's powers derive not only from the appointment but also from the Act.

By agreement, the parties can set their own rules for arbitration. The following is an example.

ARBITRATION AGREEMENT

The Claimant and Respondent named in the Schedule agree to submit the claims and counter-claims, if any, described in the Schedule to arbitration by the Arbitrator named in the Schedule, and the Arbitrator agrees to arbitrate the disputes, on the following terms:

- 1 Each of the Claimant, the Respondent and the Arbitrator must sign this agreement in triplicate and the last to sign must stamp the agreement (if stamp duty is payable) and forward a copy of the agreement to each of the others.
- 2 Within 14 days the Claimant and the Respondent must each lodge security for the Arbitrator's fee with the person named in the Schedule in the amount stated in the Schedule.
- 3 Within 14 days, the Claimant must submit a written statement of the Claimant's claims.
- 4 Within 28 days, the Respondent must submit a written defence to the claims and a statement of the Respondent's counter-claims, if any.
- 5 Within 42 days, the Claimant must submit a reply to the defence and a defence to the counter-claims.
- 6 Within 56 days, the Respondent must submit a reply to the defence to the counter-claims.
- 7 The respective submissions must be furnished to the Arbitrator and to the other party and must include all the arguments and information which either party wishes to put to the Arbitrator. Neither party can raise any claim or counter-claim other than one detailed in the Schedule.
- 8 Within 63 days, each party must submit its best offer of settlement. The offer must be of an amount in dollars (even if only \$1), which the party offers to pay the other party in full settlement of all the claims and counter-claims, but excluding the costs of the arbitration.
- 9 Within 70 days after the commencement date, the arbitrator must deliver an award without reasons. The award must be for the amount of one or the other offer. The Arbitrator is to select the offer that the Arbitrator considers to be the more just and fair.
- 10 The times will run from but not include the commencement date stated in the Schedule.
- 11 Upon delivery of the award, the Arbitrator will be entitled to the fee stated in the Schedule. The whole fee must be paid by the party whose offer is not selected. If the fee is not paid within seven days after the delivery of the award, the Arbitrator may apply the security to payment of the fee.
- 12 When the Arbitrator has been paid, the arbitrator must direct the release of any balance of the security to the party entitled to it.
- 13 Each party must bear its own costs of the arbitration.

SCHEDULE

- 1 Arbitrator:
- 2 Claimant:
- 3 Respondent:
- 4 Claims:
- 5 Counter-claims:
- 6 Security to be lodged by each party: \$.....
- 7 Person with whom security is to be lodged:
- 8 Commencement date:

Signatures:

Arbitrators can be vested with powers that a court does not have, for example the power to revise certificates (Davenport 1997). Unless the parties have agreed otherwise, the arbitrator is bound to decide according to law (s. 22 of the *Commercial Arbitration Act 1984* [NSW]). However, by agreement (as in the example above), the parties can empower the arbitrator to decide otherwise than according to law, for example, according to what the arbitrator thinks is fair and reasonable irrespective of the legal position. The parties can agree that arbitration will be entirely written.

Rarely do parties to arbitration take advantage of the shortcuts available by agreement. Usually each is seeking every tactical advantage and is not prepared to make any concessions. For that reason, arbitrations tend to be long drawn out, expensive affairs. To avoid the perceived disadvantages of arbitration, there has in recent years been a move to incorporate 'expert determination' clauses in construction contracts. Expert determination clauses are standard in NSW Government construction contracts.

18.6

EXPERT DETERMINATION

Parties may appoint a third person (the expert) to give an opinion on a value, quantity, fact or legal entitlement. They can agree to abide by that opinion. That is a valid contract that the courts will enforce, even though the expert may have negligently undervalued or overvalued. Generally speaking, the attitude of the courts is that they will not interfere with the process. If the expert has failed to do what the expert agreed to do, the parties can sue the expert, but nevertheless they are bound by their agreement to abide by the expert's opinion (*Jones v. Sherwood Computer Services* [1992] 2 All ER 170).

An advantage of expert determination is its flexibility, unrestrained by legislation such as the *Commercial Arbitration Act 1984* (NSW). Expert determination is particularly useful where there is a dispute involving subcontract work which the principal claims is defective and where the contractor does not know which side to take. For a precedent for a three-party expert determination see Cullen et al. (1996: 220–25).

Because there is no legislation covering expert determination, it is important that the parties have a carefully drafted agreement for expert determination. If the agreement is inadequate, the

courts will not fill the gaps (*Triano v. Triden Contractors* [1992] 10 BCL 305).

In expert determination, the expert has no power to administer oaths and take evidence on oath. The parties can agree that they will have written witness statements verified by statutory declaration, but there is no mechanism for oral cross-examination on oath. There is no scope for lawyers to display their skill in cross-examination, nor for the consequent legal costs.

When in an expert determination agreement the expert is required to 'decide' a dispute, what in fact the expert does is give an opinion on an issue. The example above of an arbitration agreement could be changed to an agreement for expert determination by simply changing references to 'arbitrator', 'arbitration' and 'arbitrate' to 'expert', 'expert determination' and 'decide'. Reference to the giving of an award should be changed to giving an opinion and there would have to be agreement between the parties that they will abide by and give effect to the opinion.

18.7

DIFFERENCES BETWEEN EXPERTS AND ARBITRATORS

An arbitrator decides the legal rights of the parties in dispute. An expert makes a valuation or measurement of an item or tests an item or gives an opinion. The expert does not decide the rights of the parties. The decision of the expert will decide the rights of the parties because the parties have agreed that their respective rights depend on the decision of the expert.

Arbitration is a procedure governed by the *Commercial Arbitration Act 1984* (NSW). The Act governs arbitration but has no application to expert appraisal. It provides that the arbitrator will not be liable for negligence but requires the arbitrator to comply with certain formalities, including giving reasons in writing, deciding according to law, and giving both parties a fair hearing. The Act also provides for an appeal to the Supreme Court in certain circumstances and for removal of the arbitrator if the arbitrator is biased or there is a perception of bias.

The Act provides that the parties can by agreement dispense with many of the formalities required by the Act. But they cannot contract out of the Act. The Act applies whenever the procedure is arbitration. The fact that the parties call the procedure expert appraisal or something else does not prevent it from being

arbitration. Arbitration is an arbitration no matter what the parties call it. If a person, though expressed to be an expert and not an arbitrator, is in fact finally deciding a dispute, that person will be an arbitrator.

If one party fails to pay an amount awarded by an arbitrator, the other party can register the decision as an order of the court and enforce it just as a judgment of the court can be enforced. On the other hand, if a party fails to pay an amount decided by an expert, the other party can only sue for breach of the contract to abide by the decision of the expert. Action would have to be commenced in court or arbitration to obtain an award or judgment. The decision of an expert is not itself an award.

Take the case of a contract between a council and a waste removal contractor which provides that the council will pay the contractor \$1 per tonne of waste removed. The contract might provide that:

- 1 if the parties cannot agree on the quantity of waste removed, the quantity will be finally decided by the council's engineer
- 2 if the parties cannot agree on the quantity of waste removed, the dispute will be finally decided by the council's engineer.

In the case of 1, the engineer is an expert and the procedure is expert appraisal. The engineer can be sued by the contractor for negligence in deciding, but the court will not require the engineer to give the parties a hearing or to give reasons for the decision or to comply with the requirements of the Commercial Arbitration Act. The courts will not inquire into the reasonableness of the quantity arrived at. Provided that the engineer is not negligent and acts honestly, the courts are not willing to become involved in the dispute even though the engineer arrives at a quantity which differs from the one that other experts arrived at. It does not matter that the engineer is an employee of one party and there would be a perception of bias that might normally disqualify the person from being an arbitrator (Davenport 1989d).

In the case of 2, where the council engineer is to decide a dispute, the council engineer is an arbitrator and the requirements of the Commercial Arbitration Act, including a possible appeal to the Supreme Court, apply. The engineer must decide according to law and must give both parties a fair hearing and make a written award with reasons. The successful party would normally also be entitled to an award of costs of defending the claim in arbitration.

Until the 1974 English case of *Sutcliffe v. Thackrah* [1974] AC 727, it was widely believed that a person acting as a superintendent (or

the council engineer in the above example) making valuations and certifications under a construction contract was immune from liability for negligence. From the point of view of the principal and the superintendent, this was the perfect situation. It was generally thought that the principal could appoint a superintendent who could make determinations on values, quantities or quality and, even though the value or quantity arrived at was not reasonable, the contractor had no recourse unless the superintendent acted fraudulently. The most frequently quoted authority for this proposition was the English case of *Chambers v. Goldthorpe* [1901] QB 624. The superintendent was mistakenly categorised as a 'quasi-arbitrator' and thought to be performing a 'quasi-judicial role'.

Architects, engineers and lawyers were taught that there is such a thing as a 'quasi-arbitrator' and even to this day the term is sometimes incorrectly used to describe the role of the superintendent under a construction contract. Following the decision of the House of Lords in *Sutcliffe v. Thackrah* [1974] AC 727, it is clear that under construction contracts there is no category of person who acts in a quasi-judicial role. The term 'quasi-arbitrator' should never be used in the context of construction contracts.

APPENDIX A

PARTNERING EVALUATION FORMS

RATING FORM

NAME
 ORGANISATION
 DATE

Objectives	Low 1	Below average 2	Average 3	Above average 4	Excellent 5
Develop trust					
Improve communication					
Customer satisfaction					
Minimise cost					
Minimise variations					
Enjoy work					

TOTAL SCORE AVERAGE SCORE

Observations and suggestions for improvement

APPENDIX B

PARTNERING CHARTER

RETAIL UPGRADE PROJECT

AUSTRALIAN PETROLEUM PTY LIMITED
OCTOBER 23–24, 1995

MISSION

We, the Ampol Retail Upgrade Project Team, will work in an open and trustworthy manner. We are committed to the timely achievement of project goals through decisiveness and respect for the project stakeholders. In the process of project delivery, we seek to be honest and ethical, sharing the knowledge and understanding gained from working together in an enjoyable partnership.

SHARED OBJECTIVES

- Deliver the sites of the required mix and complete the project on time
- The overall cost budget (as agreed by the PCG) shall not be exceeded
- Achieve better than industry standard workmanship,
quality in design and delivery
- Proactive response to problems and resolution of issues
- Establish a long-term relationship between project partners
- Work towards a cost effective solution for each site
- Minimise disruption to franchisee
- Minimise inconvenience to customers
- Maintain safe work practices
- Continuous improvement of design and project delivery
- Enhance profitability of the partners

APPENDIX C

EXAMPLE OF A TENDER FORM

Name of person, firm or company tendering

Address of
hereby tender(s) to perform the work for

Description of works
..... (Contract No.....) in
accordance with the following documents:

List documents

No general description suffices

When the tender documents provide that the tender is to a lump sum only, (2) does not apply. 1 For the lump sum of (\$); and

When the tender documents provide that the tender is to be a Schedule of Rates only, (1) does not apply. 2 At the rates in the attached Schedule of Rates.

If the tenderer is a firm the full names of the individual members of the firm must be stated here.

Insert date Dated this day of 20....

..... Signature of Tenderer

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