

# CONSTRUCTION COST MANAGEMENT

LEARNING FROM CASE STUDIES



UPON TEXT

KEITH POTTS

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# Construction Cost Management

Learning from case studies

**Keith Potts**



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# Construction Cost Management

In the last decade, following the Latham and Egan reports, there have been many significant changes in the role of the construction cost manager. Keith Potts examines the key issues and best practice in the cost management of construction projects under traditional contracts and new methodologies. All stages within the life cycle of a project are considered from pre-contract to tendering and post-contract.

Worked examples, legal cases and over 65 project case studies are used to illustrate the practical application of the theory, where appropriate. Extensive references are captured, including the UK government's Constructing Excellence programme and the National Audit Reports, in order to further develop an understanding of the subject. Reference is made to major projects such as the Scottish Parliament Building, Wembley Stadium and BAA's Heathrow Terminal 5.

Aimed at students of Surveying and Construction Management programmes, this book uniquely embraces cost management in both the building and civil engineering sectors in the UK and overseas and should thus prove useful to practitioners. Seminar questions are included at the end of each chapter with additional links to over 100 project case studies in order to reinforce the learning experience.

**Keith Potts** is Senior Lecturer in the School of Engineering and the Built Environment at the University of Wolverhampton. He is a RICS external examiner in Quantity Surveying, and Award Leader of the RICS-accredited MSc in Construction Project Management.

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**This book is dedicated to the memory of Francis Leon Potts,  
who first encouraged me to go into quantity surveying, and to  
the love and friendship of Lesley, Ian, Gemma and Debbie.**

# Preface

My first text book *Major Construction Works: Contractual and Financial Management* (Longman) (1995) was based on documentation assembled during 1993 and 1994; this now seems like a prehistoric era before the Latham (1994) and Egan (1998) reports!

In that book, I attempted to identify the key issues in the successful contractual and financial management on major projects. It was based on my experience as a senior quantity surveyor, at separate times employed by both contractor and client, on the Hong Kong Mass Transit Railway – at the time one of the largest construction projects in the world. In contrast to the norm at that time within the UK, the massive Hong Kong project – despite major difficulties – was completed on time and within budget. The lessons to be learned from this project were identified in the case study in the last chapter of the book. It was clear from this experience that any project could be completed on time and within budget providing the appropriate procurement systems, planning and control methods, contracts and financial procedures were in place – crucially with experienced, motivated people to implement them.

Over a decade later, the world seems very different, yet the same fundamentals apply – clients wish to obtain their project within budget and within time and to the necessary quality.

The relentless growth of the World Wide Web (www) meant that all could now easily access a vast array of important information. The problem for students, however, was in identifying which information was significant and which was superfluous.

In this new text, I have attempted to embrace the recommendations of the key reports and government bodies including the National Audit Office and the Office of Government Commerce. The book includes the tools and techniques required under the new partnering/alliancing philosophies as well as including chapters on valuing variations and claims based on the traditional procurement approach. Observations in the book are reinforced throughout with detailed analysis of over 60 project case studies with additional links to over 100 case studies. Many of the project case studies are taken from the *Building* magazine or the *National Audit Office* reports to whom the author is most grateful for permission to publish.

A chapter is included on the NEC ECC Contract, which has been the standard contract in the civil engineering and infrastructure sectors for some time and is increasingly chosen by public clients in the building sector. Its choice by the London 2012 Olympic Development Authority reinforces its status. A chapter on the new FIDIC contract is included for those working on major projects outside the UK. Uniquely, the new textbook embraces both the building and civil engineering sectors and should be of interest to both undergraduate and postgraduate students as well as practitioners.

A significant case study on the Heathrow Terminal 5 has been included. It is important that the lessons learned on this pioneering project in lean-construction are disseminated and understood by all.

Over the past two years I have received useful information from many senior quantity surveyors and commercial managers representing both consultants, public and private clients and contractors. These together with comments and observations received from undergraduate and postgraduate students at the University of Wolverhampton have deeply enriched the study. Finally, I wish to thank fellow colleagues Rod Gameson, Chris Williams and particularly Pauline Corbett for their valued help in passing learned comments on the draft chapters. Any errors or omissions are, of course, my responsibility.



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**Part I**  
**Introduction**





# 1 Introduction and overview

## 1.1 Setting the scene

There have been many significant changes in the construction sector within the past decade. The relentless development of computer power and the growth of the World Wide Web and knowledge management, the increasing use of Private Finance Initiative (PFI) and Public–Private Partnership (PPP), the growth of partnering and alliancing, the increasing importance of supply-chain management and the increasing use of the *New Engineering Contract* have changed the industry for the good. Yet, the same fundamentals apply – clients wish to obtain their project within budget and within time and to the necessary quality.

Significantly, the role of the quantity surveyor (QS) has also changed and many have moved on from contractual and financial management of projects to embrace the key role as the client's construction manager/project manager. One of the pioneer QS construction project managers was Francis Graves, who undertook the task of project controller in 1972 on the massive five-year-long Birmingham NEC Exhibition Centre project. He considered his terms of reference on this project very straightforward – *Get it finished on time and get value for money!*

An analysis of three of the top QS Consultants' websites shows their involvement in a wide range of cost management and related services (Table 1.1).

Significantly, following their successful partnership on the Heathrow Terminal 5 project, EC Harris and Turner & Townsend established Nuclear JV to tender for programme controls services and to subsequently target the wider nuclear decommissioning programme. Of particular interest, Rob Smith, Chairman of Davis Langdon & Seah, in his introduction to their 2005–2006 *Global Review* identifies some of the big issues facing us all – particularly environmental and sustainability concerns. He comments that part of Davis Langdon's contribution will be the introduction of sustainable design thinking and sustainable metrics into their cost plans ([www.davis-langdon.com/mainpage/GlobalReview.htm](http://www.davis-langdon.com/mainpage/GlobalReview.htm). [accessed 28 February 2007]).

## 1.2 Construction overview

The construction sector is strategically important for Europe, providing the infrastructure and buildings on which all sectors of the economy depend. With 11.8 million operatives directly employed in the sector, it is Europe's largest industrial employer accounting for 7% of total employment and 28% of industrial employment in the EU. It is estimated that 26 million workers in the EU depend in one way or another on the construction sector. About €910 billion