Lukas Klee

International Construction Contract Law

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About the Author

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Lukas regularly gives lectures for many organizations including FIDIC, provides training, publishes articles worldwide and is the author of several books related to international construction law.

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Foreword

Svend Poulsen
Project Director Atkins, Chairman FIDIC Contracts Updates Task Group

We often hear the word 'project' when work needs to be done. 'I have a project at home' is a regular phrase in daily conversation. In general, we see more and more of our life as a series of projects. Going on holiday is a project; preparing a dinner with friends can be a project and training for a marathon can be a project. This mindset is likely to be something we have adopted from the construction industry.

One of the first things you notice when starting work in the construction industry is that the unknown has a major impact on any project. You can even divide the unknown into the 'known unknown' and the 'unknown unknown'. The way to handle the unknowns is to use tools developed in the risk management field. These tools have been developed over many years and, when used correctly and continuously, can lead to more successful projects.

We do not know all the risk aspects when starting a project. For example, can we know and predict all the risks and problems associated with an industrial process for mass manufacturing? Designing a new car is a project. Once the design is agreed upon and all the details for manufacture are in place, the task is complete. The next step is industrial production with certainty of performance and quality of the car known – at least in principle.

Projects in the building and construction industry are unique and often only have a limited aspect of industrial process. For example, construction might use some well-defined processes such as the laying of sleepers and rail on a railway using a track-laying machine. However, uncertainty of the sub-soil conditions and other specific local conditions for the completed works will always sow the seed for risks and surprises. During execution of the works, the weather, the market situation, labour availability and so on influence the progress and certainty of achieving the agreed quality, budgeted price and finishing date.

An essential element of any project is the need for good agreements between the parties to a project. Since the 1950s, FIDIC has produced standard contracts for the construction industry. The principles of these contracts focus on fair risk sharing and the most effective mechanisms for administering the project. FIDIC contracts for construction and design-build make the Engineer the responsible party for administering the contract and managing the project. Thus, FIDIC contracts are two-party agreements for a three-party process.

The role of the Engineer is an issue that is often discussed. As an example, how can the Engineer avoid actual or apparent bias towards/against the contractor when being paid by the employer? The Engineer is an agent of the employer but their job is also to act fairly when making determinations under the contract. Contract conditions do state this obligation and it is paramount for the correct administration

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of contracts that the assigned Engineer acts in accordance with this requirement. One of the advantages of having an Engineer and not a project manager is that the Engineer has the technical understanding of the project complexity and can manage the project so that questions and unforeseen events are handled properly. Therefore, it is very difficult to succeed with a complex project without the right understanding of the contractual arrangements and the nature of the project.

In the construction business, various kinds of standard contracts are available and set different priorities depending on where they are from. Some have a very strong focus on administrative procedures and are very prescriptive. Others set up a standard framework for the contract and are very dependent on a set of special or particular conditions. Thus, choosing the right form of contract from the outset is critical. The employer should think about how they want to monitor the project and handle risks. On one side of the spectrum are the works designed by the employer and, on the other, turnkey agreements. Some extreme versions of the latter place all risk on the contractor. Risk and influence, therefore, go hand in hand.

Transfer of all risks to the contractor under a turnkey form of contract gives the contractor full control of the processes to mitigate consequences of risks. The employer has to accept that by transferring risk, they also transfer control. Why is this form of contract so popular then? Answer: the industry has seen a growing need for certainty of price and time. Financial institutions focus on budgets and time more than ever. Under these circumstances, it is extremely important that the technical requirements for the project are well defined because changes at a later stage are, in principle, not possible.

The reader of this book will see that there are a lot of people in the industry striving to make projects successful and they put in a lot of effort into improving contracts, procedures and tools to become even better at managing complex projects. Our industry has produced spectacular achievements throughout modern history. In particular, the world's need for efficient transport has been a huge driver for the engineering industry. When new and more efficient transport is introduced, society prospers. Today the focus on sustainability also influences the way we design and construct. New ways of working, new ways of co-operating and new types of projects call for new types of agreements.

Whether you read this book from cover to cover or as reference guide, you should realize that because of this book your contribution to more successful projects will have a higher value. The book gives you access to a treasure chest of knowledge collected by experienced engineers and contract managers – experience you can use when faced with the challenges that projects bring – challenges that arise from the basic fundamental nature of projects themselves.

We who work with projects know that successful projects give out positive energy and a good feeling of developing our society. With this book in hand, it is now your turn to feel the power of this positive energy.

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Introductory Remarks

Shuibo Zhang
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God says, *'If as one people speaking the same language they have begun to do this, then nothing they plan to do will be impossible for them.'* (Genesis 11:6)

The modern era has brought with it a never-before-seen demand for high quality and high quantity civil infrastructures and industrial facilities. Their importance cannot be underestimated in raising the living standards of human beings, particularly in developing countries. Estimates of global demand for infrastructure over the next decade is somewhere between US$10 to 20 trillion. Meanwhile, with the advances in productivity, construction projects are getting larger in scope and more complex in technology. They usually involve an input of vast resources, including human expertise, equipment and various materials, among other things. This makes it very hard, if not impossible, for a single country or region to cope alone. In addition, comparative advantages make it more likely and efficient for construction-related firms from all over the world to work on the same project. As a matter of fact, large and global projects are ubiquitous on current international construction markets. Take China's World Bank-financed *Xiaolanglangdi* Multipurpose Hydro Project as an example. More than one hundred organizations participated in the construction, including contractors, subcontractors, suppliers and consultants, from over fifty countries/regions. This project was thus nicknamed the 'small United Nations'. According to the *Engineering News Record*, the overseas turnover of the top international 225 contractors has been increasing for the past 10 consecutive years, reaching a total of US$511 billion in 2012 compared to US$116 billion in 2003. This indicates an annual average growth rate of more than 15%.

Indeed, the construction industry has been globalizing with the globalization of the whole world. However, globalized construction projects are temporary and inter-organizational activities and require intense communication and coordination efforts from many participants who possess different cultural and legal backgrounds. Such institutional differences tend to act as obstacles and pose problems in communication among project participants, resulting in poor coordination, misunderstandings, chaos, and even unfortunate project failures. The very recent project of the A2 motorway in Poland undertaken by a Chinese contractor is a good illustration of the latter situation. The frequent occurrence of disputes in international construction is an ever-occurring phenomenon. Therefore, a good mechanism must be designed to alleviate such a situation – namely, the construction contract. This document, at its core, is designed to make all participants *speak the same language*.

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Project contracts are legally enforceable and binding, and managerially instrumental, offering 'the rules of play' to act as a guide for the parties to work together. To cooperate efficiently and effectively, it is a must for all parties involved in international projects to have a good understanding of the rules first. However, due to the very nature of construction contracts and the different legal systems governing each individual contract, confusion may arise in the understanding, interpretation and execution of a given contract. For construction project professionals in general, this presents a challenge unless they are well informed with sound knowledge of construction-related contractual and legal issues. To the best of my knowledge, very few books on the market are available to explicitly deal with this topic.

I am pleased to learn that Dr. Lukas Klee, an experienced lawyer in international construction, has filled this gap with this new book that specifically targets international construction contracts in practical terms. This book covers the key legal and contractual knowledge areas for international construction, such as civil law/common law interrelationships, delivery methods, standard forms of contracts, risk allocation, variations, claims, dispute resolution, insurance and securities. Accompanying these subjects, the lessons learnt from the industry and around 50 vignettes collected from more than 15 countries and all continents make this book a real 'international' and 'practical' guide. The comprehensive knowledge conveyed in this book, in my personal judgement, will perfectly cater for the urgent needs of international construction professionals.

I am confident that this new book will be a great help to professionals allowing them to speak the same construction language in international projects and, in turn, will facilitate them in building a *stairway* to a better world in an efficient and harmonious way.

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Introductory Remarks

Robert Werth
Owner of werth-consult engineering and consultancy services Essen, Germany

Construction law literature is usually written by lawyers for lawyers. This often means that texts are very technical and contain a lot of law-related jargon. To a large extent this is necessary but may exclude or 'scare off' the majority of construction project practitioners.

From my daily business dealings I have seen that the biggest issues in international contracts are managing communication, understanding and the behaviour of people. We all know that international contracts are usually large, complex documents and we could assume that the people involved have the proper skills to do the job. But do these people have the proper skills under the conditions agreed to under the terms of the contract? Many construction project participants (usually engineers) use the skills gained from working with domestic construction contracts and apply this knowledge internationally. Effectively, this often means that the job goes ahead, irrespective of what the contract says. This approach may be correct from a technical aspect but riskier when considering the administrative requirements under international contracts.

For these reasons, the most important issues for management staff when dealing with international contracts is an understanding of (1) the contract itself; and (2) the legal system in which it operates.

The advantage of this book is that it covers all important international construction law aspects in a comprehensible, easy-to-read and user-friendly manner. This helps find the common understanding of an issue before it can be discussed in terms of specific contract conditions in a particular case. It is an essential reference for all parties involved directly or indirectly in international construction projects.

This book is particularly helpful because it contains a number of practical examples from real 'on-site' experience that can assist the practitioner immerse themselves quickly into the specifics of construction projects. This also makes the book interesting and 'readable'.

I highly recommend this book to anyone involved in international construction contracts.

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Introductory Remarks

Ilya Nikiforov
Managing Partner, Egorov, Puginsky, Afanasiev & Partners, Russia

My experience with international contracting in Eastern Europe, Russia and the CIS began twenty years ago. Despite the international prominence of commonly applicable construction practices (for example, under FIDIC standard forms of contract) their use and implementation in construction projects are relatively unknown in Russia and the CIS. In these regions, domestic industries work on the basis of traditional workflow documentation and contract writing dating back to the socialist era. This can cause significant problems when international construction projects 'come to town'. Typically, there is conflict of expectations of accepted standards of contract and the rights and responsibilities of the parties.

In a fast moving and globalized world, local participants need a quick-reference guide to manage their expectations in an international construction project environment. As a professional in this field, I have many books in my legal library dealing with construction projects. However, all of these references are limited in their scope to a particular legal system or territory of implementation. Prior to the publication of this book I had no materials that provided universal coverage of construction topics at a global level.

Construction disputes are infamous for being costly, lengthy and voluminous. In an industry where 'time is money' more than anywhere else, participants in the field need knowledge, a calm head and oversight to minimize delays and keep the project moving. This book is a vital tool for making this possible. Therefore, it is of great benefit to all private consultants involved in the industry. For example, engineers in developing countries and emerging markets where international practices of implementation of infrastructure projects are just becoming known will find it particularly useful. The title will also appeal to in-house counsel and privately practising lawyers for whom construction law is not their mainstream practice area. It's also a 'must read' for the wider audience of consultants, surveyors, architects and executives of project owners, employers (public and private) and domestic construction industry specialists.

The style of this book is characterized by its practical approach, lucidity of text and clarity. The author's experience, know-how and international perspective as in-house counsel of a major construction company make him perfectly positioned to write this text.

The book has the further advantage of being written by an author from a non-common law country that has just recently begun to implement international contracting practices. His exposure to these matters provides readers with a unique, fresh and unbiased look at the subject matters as they stand today, for example, the

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chapters on claims and claims management. These two chapters are literally 'from the front lines' and convey the author's experiences in a practical way.

The majority of prominent publications are written by Anglo-American authors. Mr. Klee was trained and practises in a European law setting. The legal system is based on Roman and Napoleonic Law principles which operate not only in continental Europe, but also in South-East Asia, the Middle East, Africa and South America. For this reason, readers in these jurisdictions will find this title an invaluable, relevant and user-friendly tool to solve daily questions that arise in construction, for instance, how to apply the standard forms of contract developed in common law countries locally. Common law practitioners will similarly benefit from knowing what to expect when dealing with colleagues and partners in non-common law countries.

Another key feature of this book is the fact that the author is not a native English speaker. Most of the forms and precedents relating to the subject matter are in English. Thus, the author is in the best position to assess 'translation difficulties' – in other words, managing the linguistic aspect. Readers will become familiar with technical terms used in the industry. Moreover, the reference material included in the Appendices – tables, a dictionary of construction terms, and FIDIC forms add great value and facilitate learning. This treatise is an information source which the reader will turn to time and time again as construction project demands unwind and develop.

International supranational construction law lives and develops primarily through arbitration. Arbitration awards are not systematically published and the counsels who participate 'learn by doing'. Unfortunately, the benefits of experience of arbitration are seldom passed down to other participants of construction projects (including to those whom counsel represent). The book is generously enriched and illustrated by case studies and references to arbitration awards, decisions and findings of arbitration tribunals. It is an entertaining and excellent supplement to the black letter law.

We have all been told to write in plain, easy-to-understand terms, to avoid legalese and to employ construction industry terms where possible while maintaining accuracy. This is not always an easy thing to do. The title successfully implements these principles and empowers its readers.

There is a clear need and niche for this publication for many readers from across the globe – notably in new independent states and developing countries. The author approaches the subject matters from their standpoint – that is, a non-native English-speaking construction project participant in a new economy where the forms and principles may not be familiar to them. Dr Klee's practical and concise approach to issues will be welcomed by the busy practitioner.

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1 International Construction Projects

1.1 The unique nature of the construction industry

The construction industry does not have clearly defined borders and its characteristics range from simple to complex. Construction supplies basic materials (such as aggregate, cement, steel reinforcement and pre-packaged mixtures) right up to cutting-edge technology developed and used by experts. The industry has contributed to, and is a vital element of, almost everything we see around us. For example, the diversion of water courses, land reclamation, houses, shopping centres, offices, factories, health care facilities and large infrastructure-related civil engineering works such as bridges, tunnels, highways, airports and harbours. Others installations include water treatment plants, dams, nuclear power plants, wind power plants and projects in the field of electricity generation. The contribution made by the construction of factories, warehouses and production lines that serve other industries, (including mining and research centres) cannot be ignored. The particular activities relate not only to new construction works, but also repairs, extensions, reconstructions and demolitions.

The diverse nature of the construction industry reflects the complexity of contemporary society as a whole, leading then to necessary specialization of particular activities in construction. A construction project is further comprised of complex processes, services and supplies reaching beyond the scope of this industry alone. For example, insurance, financing, bonds and guarantees, purchase of plant and equipment, security guards, operations and maintenance of work processes.

1.2 Individuality of construction projects

A construction project is a specific process or, rather, a sum of many processes. Mostly, it is an individual process. There are variables relating to the positions of its participants, their assignments and relationships, external conditions (concerning the economy, the nature of the site, climatic conditions, project risk and hazard

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levels in general), project management and delivery methods, procurement methods and public support.

Construction projects face hazards of various kinds, caused either by humans or natural elements. Therefore, people, time and environmental elements play a major part here. The construction project itself tends to be a unique set-up of processes with unpredictable impacts caused by individual hazards. For large construction projects, their duration will often exceed two years. These projects are realized over extensive areas and are often difficult to safeguard perfectly. Therefore, a construction project is not a production line you can just program to smoothly create a product, within a well-defined time, quality and financial outlay.

Design errors, extremely adverse climatic conditions, unforeseeable on-site conditions in physical or social terms, site access-related issues, building permit problems, delays due to the requirements of environmentalists and variations are just some examples of potential complications.

Effective risk management must be the aim of everyone involved in a construction project. In other words, to identify patterns and potential problems, variations, hazards and risks in order to manage them effectively. This can only be achieved through the perfect preparation of each particular project. This is the theory.

However, in practice, the lowest bid price tends to be the most important criterion in public tender evaluations nowadays. This is also a reason why contracts (for works or for design) that determine particular project relations must anticipate and involve transparent, efficient and reasonable solutions to potential problems and complications.

1.3 Roles and relationships

In the course of time, five main groups of construction project participants have emerged as major players in the construction industry. These groups are directly involved in construction projects or have an influence or a particular function within the industry. They are the contractors, designers, regulators, employers and users (Murdoch and Hughes, 2008). Lenders (banks), insurance and reinsurance companies must also be mentioned as further (indirect) construction project participants because of their significant influence on construction projects. We will now discuss these important roles in the construction project.

1.3.1 Contractors

Most frequently, contractors can be encountered as either global or local construction companies. Construction companies differ in specialization and size – from small contractors for specialized activities up to supranational organizations that enjoy major industrial and political influence.

In the field of large construction projects, contractors often collaborate within joint ventures, setting up delivery chains at numerous levels. A general contractor enters into relationships with the subcontractors who further delegate parts of their obligations down to other specialized trade contractors, and so on down

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the chain. A particular delivery method will influence the positions of the individual contractors.

1.3.2 Designers

The role of a designer is to provide the employer with solutions, drawings and specifications. Working on a construction project, the designer will often provide project management, contract administration and supervision services to the employer. When hearing the word 'designer', one usually imagines an individual, but less often a company providing the services in support of construction project realization. Today, the latter prevails, as design works becomes ever more demanding and too large to be dealt with by an individual on their own.

1.3.3 Regulators

In the construction industry, regulators apply their professional expertise, for example, in the following areas:

- land planning and related processes;
- building permit applications;
- health and safety;
- environmental issues;
- quality assurance;
- to ensure fair business competition; and
- to ensure proper management of public resources.

1.3.4 Employers

Project realization by the contractor is a service to the employer. Someone about to build a house for their family may be an employer. A developer, who is funding a shopping centre construction to sell to potential operators, may be an employer. The employer themselves may be a future owner or an operator.

A taxpayer, who is financing public projects via a public authority in the fields of transportation, infrastructure, construction of prisons, health care facilities, and so on, can also be considered an employer. An employer's characteristics depend, therefore, on whether the related funds are public or private. Significant differences between the private and public employers can be encountered. For example, in France, the contractor cannot suspend the works if the employer does not pay for the works performed in a public project. The so-called '*l'exception d'inexécution*' known in private projects in France cannot be used. According to article 48-3 CCAG Travaux 1976, the contractor can suspend the works only after three unpaid monthly invoices (Wyckoff, 2010).

In contracts, the employer is often referred to as 'the owner', 'the buyer' or 'the client', and so on. For the purposes of this book, we will mainly use the term 'the employer'.

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1.3.5 Users

All of us are users of products that are the result of construction efforts – whether we like it or not. Our views on construction projects are often subjective and vary for many different reasons. Other vital aspects are how the public perceive the inconvenience and nuisance that can occur during the course of construction or if the public really think that there is a need for a particular building. Specific traditions and cultural influences of the relevant society are a significant factor as well.

As a field of activity, the construction industry is traditionally burdened by uncertainties that may cause distrust between the employer and the user.

1.4 Contract administration: The Engineer

Construction contracts are different from other commercial agreements because of the high degree of uncertainty. While the contract documents will provide a definition of the scope of works to be performed, a high degree of project complexity still leaves a lot of room for uncertainty along the way to the final result. This makes the task of administering the contract an important part of the larger process of 'managing uncertainty'.

Furthermore, the question of 'moral hazard' is sometimes mentioned (Winch, 2010), i.e. the difficulties the employer can face in ensuring that the contractor will perform the contract in good faith and bring it to its desired outcome. As a rule, the contractor possesses better technical and managerial skills than the employer. The absence of a proper contract that will provide clear terms and procedures regarding all relevant aspects and an efficient risk allocation may leave the less informed employer exposed to the risks associated with moral hazard and suffering from a potentially severe compromise regarding the desired outcome.

On the other hand, large public procurement construction projects are often accompanied by political irresponsibility on the employer's side, mainly when problems are encountered. Nobody wants to be responsible for cost overruns and delays. To avoid responsibility, employers sometimes shift the risk of negative consequences of badly prepared projects onto contractors (e.g. delayed expropriation risk or bad ground conditions risk in underground works). Such 'one-sided contracts' actually negatively affect the smooth implementation of projects and consequently are considered disadvantageous to the borrowers due, amongt other things, to the late completion of the project (JICA, 2011). If this is done systematically, it is also dangerous for society. From a socio-economic point of view, it leads to frustration and a waste of resources in the short term and more expensive construction works and damage to the local economy over the long term.

Corruption is another 'moral hazard', which is much more serious and afflicts the construction industry as a whole.

There are certain well-known rules of risk allocation. The ultimate rule is that risk allocation must be efficient and if there is a non-insurable risk that is hard to quantify, the risk should be borne by the one who bears the majority benefit. It is self-evident who bears the majority benefit if it is a public construction project. In this case, it is the employer and the users. Furthermore, the state as an employer is

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often the stronger party (applying a take it or leave it approach to contracts). Thus it seems to be appropriate to apply the principles of protection of the weaker party (the contractor) in such public construction projects.

Another principle that must be stressed is the principle of good faith protection. The governing law usually does not protect the one who is not fair, misuses their position and, as in the case of public employers, invites contractors to deliver projects where risks are speculatively shifted onto contractors and the terms of reference of the particular contract happens to be a sophisticated trap.

Another problem seems to be the fact that international contract forms are often 'imported' to developing countries. Naturally they are less familiar to the local employers in both legal terms and working procedures (Banica, 2013). Employers in both the private and public sectors do not pay enough attention to the uneven knowledge asymmetry when facing and entering an agreement with a contractor, as well as to the need to manage this risk through contractual means and by employing a consultant as contract administrator or project manager. Employers tend to show an exaggerated optimism and focus extensively on establishing an initial contract price, without a clear understanding of the importance of setting clear rules regarding the management of change, regardless of the source of the change such as claims, variations, disputes, additional work, etc. (Banica, 2013).

Add to this the fact that the construction industry in developing countries (still in the first stages of modernization) has not yet formed a body of knowledge or produced a significant number of contract managers/consultants familiar with international contracting and procurement practice and the local specificities and working culture (Banica, 2013).

The position of the 'contract administrator' is of key importance. A contract administrator hired by the employer on a professional service agreement basis deals with coordination, monitoring, supervision of compliance with standards, certifies the works done, testing, taking over, participates in variation, price and time management, claim evaluation, contract interpretation and dispute avoidance. They should help to complete a successful project in a fair way and in accordance with the contract, achieving the demanded standard in the agreed time and for the agreed price.

The contract by itself is not enough to solve the problem of moral hazard and the asymmetry of knowledge between the employer and the contractor. The second key element required is the presence of a third contractual party – namely, the contract administrator (Banica, 2013).

In terms of contract administration, there are three usual arrangements in force:

- The 'engineer' as an employer's agent, whose job is to monitor and supervise the work, whose duty is to make fair determinations on certain matters (e.g. on claims for extension of time and additional payments; see an example of such determination in Appendix 6). The engineer issues certificates on payments, taking-over and performance.
- The employer's representative where the contract is administered directly by the employer or its representative. If the contractor is to achieve the certainty of time and price stipulated, then the involvement of the employer must be limited to a minimum during construction.

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- The construction manager as an employer's agent hired to coordinate all processes on a professional service agreement basis without direct responsibility for design and works (see Chapter 3).

1.4.1 The Engineer

The engineer's rights and duties consist simultaneously of two parts. The first is acting on the employer's behalf, where the contractor can take the engineer's conduct as the employer's conduct and misconduct (such as the engineer's instructions regarding variations). Acting in their second role, the engineer is an impartial third party who is professionally skilled to maintain an equitable balance between the contractor and the employer (such as in settling disputes). The independence of the engineer (an entity/person appointed and funded by the employer), often becomes the topic of numerous debates. It is in the interests of all construction project participants to ascertain and clarify the engineer's competencies to limit disputes about who will, in fact, act as the engineer on a particular project. The question, 'What are the attributes of the engineer and when can a party be said to have tacitly accepted someone as the engineer?' (ICC, 2009) was answered, for example, in the ICC case no. 10892 (the tribunal found that the engineer was the employer itself in this case).

A competent engineer (allowed to do their work by the employer) is in many cases a mandatory prerequisite for a successful construction project. A company or a group of consulting engineers and designers are mostly acting in the role of 'engineer'. Their specific representatives have to be appointed for particular activities. An engineer can also be an employee of the employer, but this is a very problematic approach in practice. In respect of this, Jaeger and Hök (2010, p. 222) refer to a decision of the Arbitration Court of the International Chamber of Commerce. In this case, the arbitrators dealt with the replacement of the engineer with an employee of the employer (where the employer was a statutory body). According to the arbitrators, this replacement resulted in contract frustration. The authors support the view that it is unacceptable for the employer and the engineer to come from the same organization. However, in this case, the International Federation of Consulting Engineers (FIDIC) conditions included an express impartiality clause.

As a rule, the engineer's individual rights and duties are assigned by a particular agreement with the employer. The engineer is typically entitled to give the contractor instructions related to work executed (and to remedy any defects) and the contractor is obliged to follow their instructions. The engineer must usually, for example, clarify any ambiguities and discrepancies should they appear in the contract. But it is not within the engineer's powers to change the contract – they are not, therefore, empowered to relieve either of the parties of their duties, commitments or responsibilities arising from the contract. Their assignment does not exempt the contractor from any liability they have under the contract.

The engineer should be a professional with all necessary skills and experience, and have a good knowledge of the contract and contractual procedures (e.g. methods of re-measurement, delay procedures and disruption). The engineer should be able to foresee all legal, commercial, and technical consequences of their instructions, particularly those that lead to variations. They should be able to fairly evaluate the

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adequacy of new rates or prices where it is necessary to create them. The engineer should also be able to fairly determine – in terms of claims – additional payment or extensions of time for completion (Jaeger and Hök, 2010).

According to the FIDIC CONS MDB/Red Book (2005 MDB Edition), the engineer has the following roles (JICA, 2011):

1. *Employer's agent*: the engineer provides the following services to conduct the contract management:
   - production of detailed design drawings under Sub-Clause 1.9;
   - issuance of instructions for variation of the works under Sub-Clause 13.1;
   - review of plans and drawings submitted by the contractor under Sub-Clause 4.1;
   - carrying out project management services including time and cost management, quality control, testing and inspection, safety and environmental management under various Sub-Clauses especially 8.3, 13, 7, 9 and 4.9.
2. *Certifier*: the engineer issues various certificates certifying the quality of the contractor's performance and payment is therefore at the engineer's discretion. The engineer's certificates have a strong binding effect on both the Employer and the contractor. Examples of certificates follow:
   - taking-over certificate under Sub-Clause 10.2;
   - certification of work completion date under Sub-Clause 11.9;
   - interim payment certificate under Sub-Clause 14.6;
   - defect liability certificate under Sub-Clause 4.9;
   - final payment certificate under Sub-Clause 14.13.
3. *Determiner in claim settlement*: The contractor has a right to claim settlement from the engineer. The engineer should consult with both parties on the matter in question based on Sub-Clause 3.5 in order to come to an agreement. If the consultation reaches an impasse, a fair determination should be made based on the contract.

The Engineer's certifications and fair determinations

Within the scope of their activities, the engineer can issue various types of certificates. The FIDIC forms, for example, presume numerous certificates. These include interim payment certificates, final payment certificates, taking-over certificates and performance certificates. Pursuant to the FIDIC forms, any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test or similar act by the engineer (including absence of disapproval) shall not relieve the contractor of any responsibility they have under the contract. This includes responsibility for errors, omissions, discrepancies and non-compliances. Pursuant to FIDIC forms, for example, it further applies that the engineer may, in either of the payment certificates, make any correction or modification that should have properly been made to any previous payment certificate. A payment certificate alone shall not be deemed to indicate the engineer's acceptance, approval, consent or satisfaction.

Under FIDIC, whenever the employer or the contractor submits a claim, the engineer is required, in the first instance, to mediate between the parties to facilitate agreement. If the parties cannot agree, the engineer must make 'a fair determination

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in accordance with the contract, taking due regard of all relevant circumstances'. Accordingly, any determination must express the rights and obligations of the parties in accordance with the contract and applicable law, irrespective of any preference expressed, or pressure exerted by either party.

In terms of engineer certifications, it is very interesting to compare the opinions of lawyers from different countries (available at: http://globalarbitrationreview.com) who responded to the following questions:

1. When must a certifier under a construction contract act impartially, fairly and honestly?
2. To what extent are the parties bound by certificates (where the contract does not expressly empower a court or arbitral tribunal to open up, review and revise certificates)?
3. Can the contractor bring proceedings directly against the certifier?

- *England and Wales*: Where a person is employed by the employer under a construction contract to issue certificates or make decisions as part of the administration of the contract, he is required to act in accordance with the contract, fairly and impartially, and holds the balance between the employer and the contractor. Whether or not a certificate is binding and conclusive will depend upon the interpretation of the contract as a whole. If the contract, properly interpreted, provides that a certificate is to be binding and conclusive, the grounds for attacking such a certificate are much narrower. Inclusion of an express power for arbitrators to open up, review and revise certificates is necessary if arbitrators are to have that power. By contrast, no express wording is required in order for the courts to have the power to open up, review and revise certificates, etc. Nevertheless, the absence of the open-up review and revised wording does not necessarily mean that the certificate cannot be challenged in arbitration. Unless the contract provides that a certificate is to be binding and conclusive, it can be attacked on various grounds, including where the certifier acted outside his jurisdiction, dishonestly or partially in issuing the certificate or where the certificate is otherwise defective as a matter of form, substance or intent.

  Where the certificate can be opened up, reviewed, revised or otherwise challenged, the contractor will, unlikely, have a cause of action directly against the certifier. Absent the ability to challenge certificates, it is possible that the contractor may be able to proceed directly against the certifier but the contractor would have to show that the certifier owed it a duty of care in issuing the certificate and that the certifier was in breach of that duty. This will depend upon the facts (Choat and Long at globalarbitrationreview.com).
- *France*: Architects or engineers who verify payment certificates as part of their supervision of the works must act with due care within the scope defined in their contract with the employer. The extent to which parties are bound by certificates will generally depend on contractual terms. Where there is an over-certification of payments, the certifier may be held jointly liable with the contractor. Administrative case law also shows that a contractor can bring proceedings against the certifier (Gillion and Rosher at globalarbitrationreview.com).

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- *Germany*: A certifier under the construction contract is obligated to act impartially, fairly and honestly. Such obligation derives from its mandate/contract with the parties and – depending on the nature of the certifier – from its administrative duties deriving from his or her official role as (state-certified) certifier. The parties are generally not bound by certificates, but may have them reviewed under the construction contract's dispute resolution regime. Claims may be brought against the certifier him or herself outside of the contract by both the contractor and the employer as obligations and duties of care are created through the mandate to certify certain facts in connection with the construction contract (Kremer at http://globalarbitrationreview.com).
- *Ireland*: There is an implied contractual obligation for the certifier to act independently, fairly and impartially as between the contractor and the employer. It is not unusual in Ireland for the employer to appoint an employee within its organization as an employer's representative and certifier under the construction contract. The commonly held position in Ireland prior to 2007 was that a contractor was entitled to enforce an interim payment certificate by way of summary judgment as a debt due. Following the decision of the Irish High Court in *Moohan & Bradley Construction Limited v S&R Motors Limited* (2007), contractors operating under the standard RIAI contract terms can no longer rely on being awarded summary judgment in court on interim certificates where a valid defence is raised. In such cases, even where judgment is granted, the execution of that judgment may be stayed pending the outcome of an arbitration hearing on all the issues between the parties (Killoran, O'Higgins and Cooney at http://globalarbitrationreview.com).
- *Korea*: (1) A certifier or an engineer is administered under the *Construction Technology Management Act* ('the Act'), which categorizes the work scope of a certifier into three different areas: design, inspection and survey, and construction. The Act requires any certifier to act honestly, with dignity and in the interests of quality improvement. (2) The parties are bound by certificates to the extent required by the contract, but these are not mandatory requirements for the completion of the works under the contract. (3) The contractor may bring proceedings directly against a certifier based on wrongful conduct and is able to claim damages for tort liabilities, which is also stipulated in the Act (Oh and Park at http://globalarbitrationreview.com).

The Engineer's responsibilities and liabilities

Under the conditions of the contract with their employer, the engineer is responsible for the duties they undertake (designer, agent, supervisor, certifier, adjudicator). The engineer under FIDIC forms owes a duty of care also to the contractor in exercising their discretion in an impartial manner within the terms of the contract, and having regard to all circumstances. This duty of care exists alongside the other duties which may be imposed in tort under the governing law in order to avoid causing physical loss or damage or, in some cases, economic loss, with or without physical damage. The engineer may be responsible (and liable) for negligent design and supervision, negligent under-certification, negligent statements and instructions,

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lack of cooperation, lack of prevention of damage, and so on. The engineer is also responsible against third parties. The potential liability and the form and extent of liability depend on the governing law (Bunni, 2005).

1.5 Further important aspects of construction projects

A construction project is a temporary configuration of processes – a temporary multi-organization. Every construction project will bring together large numbers of people in their joint efforts who are aware of the temporary nature of the project. Large numbers of professionals and specialists cooperate within every construction project.

Employers, designers and contractors are the most frequent, direct participants in construction projects. Large construction projects also have large numbers of employed people representing these direct participants. Each of them is an employee of an organization and, frequently, a member of a professional association with different interests, roles and priorities. It is therefore important to set up an efficient method of management and organization within a particular project to help create a common synergy for construction project success. It is equally important to establish a certain positive social atmosphere to help overcome problems that accompany every construction project.

A typical yet important issue that often arises is a change in the function of the engineer, contractor or employer's representatives over the course of the project. The removal or replacement of a vital project management position can cause confusion and lead to technical complications, contract price increases and delays.

Representatives of construction project participants have various levels of knowledge, different specializations and varying interests. As a result, the competency and authority of these parties may be unclear. When things go wrong, it is not unusual for some people to avoid responsibility completely and for others to unfairly get the blame. It is extremely difficult to harmonize the interests of all participants.

It must be remembered that the duty to deliver value for money, quality and timeliness prevails over individual interests.

1.5.1 Overlap of construction project phases

Three phases of a construction project can be distinguished: preparation, design and realization. The operating phase, if any, can be seen as a part of the realization of the project. Often intentionally or inevitably, these phases overlap with each other. The overlap of the design and realization phases may appear in cases of Design-Build Projects (see Chapter 3). This may speed up construction or make it more effective where a variation in, or clarification of, the design becomes necessary during realization. Variation Management (or Change Management) is a key aspect of project management in construction and a contract must be the main instrument used to define respective procedures.

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1.5.2 Admissibility of variations and the need for variation management

The emergence of unforeseen events in construction projects is inevitable. It can almost be guaranteed that a large construction project will deviate from the employer's, designer's or contractor's original vision. The ability to foresee such modifications in the contract and provide respective solutions from the outset is critical to avoiding disputes. Good contracts envisage this and therefore contain variation clauses and procedures (see Chapter 8).

Obviously, variations administered on the basis of a variation clause cannot imply breach of contract, as it is the contract which enables variation. When used in a contract, the variation procedures include, for example, the way to propose the variation, a form of instruction to vary, periods, pricing method and sample variation orders.

1.6 Typical contractual relationships

Typical contractual relationships among direct construction project participants are mainly expressed in contracts for works, contracts for purchases and professional service agreements.

The fundamental risk allocation and delivery method must be stipulated in a contract between the employer and main contractor. This is the 'main contract'. Other contracts arise within the delivery chains. A joint venture agreement is also common and important in practice.

Further contractual relationships arise in connection with insurance (see Chapter 14) and securities (see Chapter 16).

1.7 Motivation for international business

The construction industry and construction projects were, traditionally, local by nature. Construction contractors and their employers were typically limited to businesses/projects in their geographical area. These days, by contrast, the construction industry is witnessing globalization. Integrated processes, newly emerging supranational formations, government programs supporting investment, the expansion and development of means of communication, social networks, increased mobility of goods, capital and labour, have all had a major impact on the construction industry.

The fall of socialism and the consequent liberalization in the 1980s in Eastern Europe and Russia led to a relaxation of the formerly protective policies in many countries. The end of central planning created new opportunities for construction companies from First World countries in the West where the infrastructure was already well developed.

Preconditions for international construction business expansion can include any of the following: implementation of clear and open international rules of commerce,

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foreign investment incentives, availability of credit, trade agreements, contract law modification, development of alternative dispute resolution, international treaties on investment protection, enforceability of arbitration awards and protection of new technologies under intellectual property laws – particularly in terms of EPC contractors in oil, gas and energy projects.

Global companies are using their know-how, synergy and financial strength to expand their business. In numerous developing and Third World countries, foreign companies have acquired state-owned companies or entered into joint ventures with local private companies.

Contrasting examples of international projects in a globalized world can include a small warehouse for an international vendor, a complex strategic energy project with the involvement of several countries as employers or an international joint venture as a contractor under different applicable laws and rules of dispute resolution. The element of internationality can mainly be found in the place where the project is implemented, in the parties to the contract, in the procurement and contracting procedure and in the technical and legal standards.

Cross-border projects foster competition, but also put pressure on employers to properly manage international tenders in terms of how to engineer, procure, construct and supervise work. In the case of public tenders, an employer must, first of all, be able to ensure proper preparation of the project. In particular, to provide funding, obtain building permits and provide access to the site including archaeological surveys and settlements with utility owners and land owners. Local laws must be ready for international construction projects, mainly in terms of public procurement, construction law, environmental protection, technical and quality-related standards, commercial contractual relationships, dispute resolution and competition law. The employer must provide appropriate design documentation and technical specifications. Most importantly, the employer must provide the people well qualified enough to act as their competent representatives/agents in the other country. Last but not least, the employer must select an appropriate delivery method (see Chapter 3). The risks that result from shortcomings in the mentioned domains complicate financing, tender procedures and sometimes can even jeopardize the implementation of a particular construction project.

The above-mentioned risks will obviously prolong the realization and increase the cost of construction projects. Therefore, the international construction business is very demanding for construction companies that want to conduct their ventures abroad. By the same token, local companies are challenged by international competition. Ventures abroad increase demands on the employees of both local and international contractors. Recruiting and educating these employees form one of the most demanding missions of an international construction contractor.

The primary motivation of a contractor for an international venture is either 'offensive' or 'defensive'. Here, the 'attack' is to be perceived as a proactive, strategic decision ensuring another business opportunity to sustain growth and the 'defence' is to be perceived as a response to a lack of work and opportunity in the country of origin.

An interesting case study of a unique international project was presented at the 2012 International Engineering and Infrastructure Congress (Scott, 2014). Fredric S. Berger, the chairman of the Louis Berger Group, Inc. shared with the attendees his

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firm's experience in carrying out a US$250 million project in 2003 to reconstruct 384 km of roadways and bridges in Afghanistan from Kabul to Kandahar. The firm was given an eight-month deadline and the work had to be carried out while military operations were proceeding. 'We had a war going on,' he explains in summarizing his remarks at the conference:

> We were working on a road that served 30% of the population but we could not enter because it was in the most heavily land-mined country in the world and had been destroyed by war for over thirty years. So there was no construction machinery, no construction industry, no construction workers, and no construction materials. We not only had to resolve the question of how to get equipment, workers, and materials into the country fast enough [to complete the project on time] but we all had to do that in the context of a threat-prone environment.

Berger says that, after the landmines had been removed from the roads and rock quarries, all of the contractors brought equipment in from outside the country. In some cases it was flown in, and in others it was brought in by road from Pakistan. Berger had to get a special waiver from President Bush for the contractors in Turkey to bring their equipment through Iran. 'We had to modify the standard FIDIC contract,' says Berger.

> We were in a war environment, and we could not allow the contractors to exercise the *force majeure* clauses and shut down their projects. So we pre-negotiated stand-down daily rates so that if there was an incident in their area we could tell them to go inside the camp and lock the gate. So we paid them a fixed rate per day; it was pre-negotiated rather than let the project be shut down.

1.8 Managerial analyses

In the international construction business, careful risk analysis is of the utmost importance. In general, there are two basic levels of risk analysis: (1) the analysis of a particular target market; and (2) the analysis of a particular construction project. Many various management techniques and formulas are used in conducting market analyses. To evaluate the external environment in terms of political, economic, social, technological, environmental and legal factors and their influences, the PESTEL analysis is often used.

- Tax policy, labour legislation, environmental legislation, restrictions on trade, customs and political stability reflect how and to what extent the government intervenes in the economy are among the political factors.
- Economic growth, interest rates, exchange rates, inflation rates and GDP are ranked among the economic factors.
- Social factors comprise cultural aspects such as health care awareness, age structures, thee demographics of an ageing population, the value of human life and emphasis on safety.

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- Technological factors include technological aspects such as research and development, automation, levels of innovation, technological stimuli and the rate at which the technological changes occur.
- Environmental factors are the ecological and environmental aspects (weather, climate, climate change) that may have a major impact on industries such as tourism, agriculture, insurance and, of course, the construction industry.
- Legal factors concern consumer rights, competition law, labour legislation, health and safety and commercial law.

Strategic capacities are often explored by means of the SWOT analysis. They are, in particular, resources (i.e. what we have) the competencies (i.e. what we are good at). SWOT stands for *Strengths*, *Weaknesses*, *Opportunities* and *Threats*. The questions, therefore, are:

- What are our strengths?
- How can they be exploited?
- How can the impacts of our weaknesses be minimized?
- What are our opportunities?
- How they can be used?
- What are the threats preventing us from making use of these opportunities?
- How can these threats be overcome?

For these reasons, careful analysis and investigation of the internal and external environment are required.

Another popular analysis is the *Porter's Five Forces Analysis*. This can assist in setting up a business analysis framework. The Porter's Five Forces Model defines the forces that determine the level of competition in an industry and, therefore, its attractiveness.

Porter defined two vertical forces – the power of suppliers and employers, along with three horizontal forces – the threat of new competitors in the market, the threat of substitutes, and the threat of established competitors. Having analysed the external and internal environments, one has to assess the influences on product or business plans and draw up a strategy.

1.9 Hazards and risks

Large construction projects are regularly exposed to numerous hazards. Construction project participants (mainly the employer and the bidding contractor) should identify potential hazards and carry out a systematic risk analysis to assess the respective risks of a particular project properly. Lenders (such as banks) and insurance and re-insurance companies often require a risk analysis before providing loans or insurance. Every contract must contain instruments to cope with foreseeable hazards and risks. A risk can be defined as the probable value of damage caused by the realization of a hazard.

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Concerning risk, it is not the contractor's objective to avoid it completely, but to identify and be able to mitigate it in order to achieve a competitive advantage. Three main phases can be distinguished in respect of handling risk:

- hazard identification
- risk analysis
- anti-risk measures.

1.10 Hazard identification

Risk, in principle, is not a bad thing. Naturally, people tend to seek certainty by avoiding change and risk. One can even benefit from risk if one is not afraid of it. In construction, the aim must be to avoid risk and adverse consequences by systematically identifying, analysing and taking action.

Individual hazards and associated risks may have different levels of importance in particular projects and must be considered from the point of view of the employer's and the contractor's priorities. In some projects, price will be seen as a priority, in others the time for completion or the highest standard of performance.

A construction project – like any other industrial or non-industrial project – faces external hazards, internal hazards and mixed hazards. A hazard of external origin can be defined as a hazard arising from the natural technical, economic and social environments in which the project takes place, for example, poor cash flows, religious unrest, floods, aircraft crashes and unstable currency exchange rates.

A hazard of internal origin, on the other hand, arises from the project itself and includes hazards that threaten the project directly and indirectly. Examples of direct internal hazards include embezzlement, delays, decision-making faults and errors. Indirect internal hazards are those that jeopardize the project in a secondary way and may involve external third parties, for example, disputes with authorities on matters of environmental pollution and activism by environmentalists. The latter may result in disruption through protests or even court-ordered injunctions.

A mixed hazard is one which arises when project management erroneously or inappropriately responds to an external hazard.

Hazards threatening a construction project can be further broken down into two broad groups:

- *anthropogenic hazards* – caused by people in various forms (individuals, groups of individuals, an organization, and the like);
- *natural hazards* – caused by natural elements (storms, earthquakes, black ice, and other natural disasters).

1.11 Risk analysis

Identification of hazards is followed by risk analysis in which the probability of adverse consequences (frequency of occurrences, implications, and the like)

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are evaluated and lead to a decision regarding the selection of appropriate risk management strategies.

1.12 Anti-risk measures

Measures to be taken to reduce or eliminate risk depend on the decision-maker's financial and human resources as well as on the feasibility and availability of respective measures. Some risks cannot be prevented at all.

In general, in risk analysis, four strategies can be distinguished, called the '4 Ts':

- Take
- Treat
- Transfer
- Terminate.

1.12.1 Take

A risk management strategy which relies on the wilful absence of any precautions and involves accepting the loss (or benefit of gain), from a risk when it occurs. This is a viable strategy where potential risks are small or where the cost of insuring against the risks would be greater over time than any potential losses sustained. The same can be said for risks that are so large that they are either uninsurable or the premiums are unfeasibly high. A solid budget contingency is the only possible way to secure against this kind of risk.

1.12.2 Treat

This risk management strategy is based on risk prevention and allocation. This strategy follows the principle of 'prevention being better than cure' and adopts both proactive or reactive approaches. The first rule gives preference to proactive management which is focused on avoiding hazards so that they are not realized. Complete prevention may not always be feasible so, in this case, hazards need to be effectively mitigated. The realization of a hazard or a risk will always adversely impact upon the project as it may increase prices, cause delay or disruption and potentially affect output quality. A reactive approach can be taken where proactive management is impossible. In this case, it is necessary to adequately prepare for the realization of potential hazards to mitigate potential, adverse consequences.

Good contracts push the construction project participants towards proactive approaches. This can be implemented through contractual duties such as early warning obligations (i.e. timely notification of events which will have an effect on time or price) and obligations to prevent and mitigate damage.

The treatment of risk also involves an efficient allocation of risk between the project participants. Two principles can be distinguished here. This first is the centralization principle where risk is borne by a single party and, second, the decentralization principle where risk is borne by the party most able to manage it efficiently.

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1.12.3 Transfer

Risk is transferred to a third party against payment, usually in the form of insurance. In fact, the risk always stays with the project participant and the insurer provides an agreed indemnity. Risk may also be shared, such as with a partner in a consortium or joint venture.

1.12.4 Terminate

It is easy to refuse a project because of a potential pending hazard, but 'he who doesn't risk never gets to drink champagne'.

1.13 Typical hazards in the international construction business

When trying to expand its business abroad, a contractor mainly considers the following areas and issues:

- the political situation or stability of the country and related trend prognoses;
- business-related legislative conditions, opportunities in the market;
- international treaties (e.g., on investment protection), bilateral conventions, diplomatic missions, membership of FIDIC;
- employment of foreign labour (or sending the labour abroad), the taxation, social security and health insurance payments and other accounting requirements that would follow;
- legislative conditions under which local labour can be employed, the wage and social conditions, protection of health and safety and visas;
- labour union requirements;
- availability and cost of local lawyers and other counsels;
- public procurement procedures and qualification criteria;
- customs duties, taxes and fees;
- forms and conditions for doing business in a particular market in respect of foreign entities;
- standard forms of contracts and related restrictions, if any, imposed by mandatory law;
- the enforceability of laws, local litigation, local arbitration and the enforceability of their awards;
- building permit proceedings, the functions of local building authorities and their control;
- the specifics of the governing law;
- the level of endemic corruption;
- technical standards and their sources, certifications and licences;
- the largest private and public employers and the financial institutions and their particulars;
- delivery methods of choice;
- the relationships between employers and contractors;

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- the availability of technologies, equipment, labour and materials;
- the main players in the construction market and their strengths, contractors/suppliers and their references and strengths, a list of suppliers of key materials (steel, concrete, aggregate, sand, cement), power and other utility services;
- passing on of market experience, maturity of business relationships, reliability and availability of local business partners;
- reliability of internet browsers, and electronic sources of information;
- the currency in which the work, materials, plants and equipment are to be paid;
- insurance availability and requirements;
- availability and requirements of securities (bank guarantees, bonds, suretyships);
- import restrictions, restrictions applicable to foreign companies and subsidies.

1.14 Risk allocation in contracts

As previously mentioned, risk management may take the form of a contractual risk allocation between the project participants. In practice, an inefficient allocation (of an unclear risk or of a risk that the party is not able to control) will result in speculative claims, disputes, or even contractor bankruptcy. Furthermore, a contractor will allow for risk in their bid price via a 'risk surcharge'. The employer pays for the transfer of risk in such a situation.

Standard forms such as the FIDIC conditions of contract will guarantee a balanced and efficient risk allocation, provided they are not significantly altered. Such standard forms are commonly prepared by professional organizations or representatives of various interest groups such as contractors, lenders, employers, consulting engineers, etc. to achieve well-balanced risk allocation.

It is worth mentioning here that common law practitioners seek to exhaustively list and describe all risks in the contract. Civil law practitioners rely on civil codes. Lawyers in the Anglo-Saxon jurisdictions may then be surprised by the fact that the governing law can influence contractual risk allocation. Similarly, judges in the common law world respect contractual risk allocation more so than their learned colleagues from continental Europe.

Wrong forms of contract by James Bremen (UK)

Many state entities either have their own (usually common law-based) historic form of bespoke construction document, or prepare their own set of amendments to a standard form (e.g. FIDIC or NEC). Whether or not a bespoke form (or amended standard) is used, there are a number of recurrent problems which plague projects in the emerging markets:

- Where the contract has not been adapted for the location and governing law of the project, many of its provisions will either not operate or provide a basis for claims and disputes into the build-phase.
- Often sponsors use the wrong form of contract (e.g. a lump-sum turnkey form, where the appropriate form may be construct-only or design and build).

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- Insufficient analysis carried out of project-specific risks, with the result that risks are often inefficiently allocated to the contractor where the employer ought to carry them, as they are in the best position to manage them. This rarely addresses the risks, and ultimately results in a claim by the contractor.
- Because different departments often prepare the forms of contract and technical schedules, there are very often significant inconsistencies in these documents which are the basis of contractor claims.

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1.15 Form of business organization

1.15.1 Representative office and domestic or foreign subsidiary

In general, there are two ways of doing non-collaborative business abroad. This can be done through a representative office based abroad or via a domestic or foreign subsidiary. Selecting the appropriate business form for a particular country or for a particular construction project is one of the keys to success.

The right to do business will usually be granted on completion of an entry in the local business register. The cost and time demands in connection with setting up a representative office or a subsidiary will vary depending on the target market.

Both forms of doing business abroad have to be chosen with the social-political situation, tax considerations, financial planning, commercial objectives and priorities, risk management and business-related legislative conditions in mind.

The major difference between both forms is in the legal status and responsibility. A representative office is not a separate legal entity – it is merely a tool to prolong the company's reach. As a result, any contract-related liabilities or even damages can still be borne by the company itself. A brand-new, independent legal entity, on the contrary, will arise if a subsidiary (sometimes also called a 'daughter company') is founded. The reasons for creating a subsidiary to operate in a foreign country usually centre on tax and liability concerns. However, subsidiaries with limited liability may experience difficulties in obtaining credit, insurance, securities, etc.

1.15.2 The consortium and the joint venture in construction

Consortiums and joint ventures are collaborative forms of business organizations. In construction, it is not always clear what the factual and legal meanings of these

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particular terms are. Both of these business forms are commonly used in joint construction projects by contractors. In practice, the contractors usually unite for large construction projects because the nature and demands of such projects are beyond the capacity of an individual contractor. A single contractor is sometimes unable to meet the qualification criteria for the project or is lacking the resources as they are engaged in other projects. Take, for example, the construction of a railway corridor – such a project will require the cooperation of companies specializing in landscaping, traction power lines and design.

Another reason is the need for strategic partnerships in international business. A local partner is often indispensable whenever a new market is entered, as they already have established relationships with the employer, designer or contract administrator, have experience with local subcontractors, suppliers and unions, and are familiar with local business rules and practices. The formation of an association is also a way to deal with risk and to improve marketability and credibility. Risks are divided between the parties and the specialist skills on offer collectively strengthen the bid.

As in life, the biggest challenge is to find a reliable partner for a particular collaboration. Therefore, it is important that a contractor learns as much as possible about their potential partner. In particular, their financial status and good references. After such a 'due diligence' check has been completed, a contract can be signed and a successful partnership developed.

Employers often require bidders to enter into collaborative forms of business organizations so that they are jointly and severally responsible for the fulfilment of their obligations under the contract with the employer. Having become part of such a venture, each of the participants must be prepared to deal with the issue of becoming solely liable for the other participants' obligations should the latter collapse (e.g. due to insolvency).

In practice, potential contractors join forces at the tender stage, though there is nothing to prevent such a joint venture from being created during the construction phase. In the latter case, such a joint venture is internal in its nature and therefore excludes any joint and several liability to the employer.

The governing law, its respective limitations and accepted forms of association should always be evaluated whenever a consortium or a joint venture is to be established. Contractors must take into consideration any statutory requirements and the mandatory provisions of a particular applicable law. For example, they must consider if it is necessary to conclude the respective contract in writing, how to determine the governing law in the absence of a selected jurisdiction, when exactly the consortium or joint venture is to be founded, etc.

It is the responsibility of the contractors and their actual priorities in particular projects to determine what kind of 'form' of cooperation they choose. Consortiums are easier to create and require fewer resources and commitments than joint ventures.

1.15.3 The consortium

A consortium is the most widely used association by contractors to join their efforts in construction projects. A consortium consists of two or more contractors uniting

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to set up an association of independent contractors. A consortium is not a legal entity, bids are jointly submitted and the parties are jointly and severally liable for work performed under the contract. Commonly, consortium members perform the works separately as they distribute the particular parts of the work between themselves. Moreover, the consortium's losses and profits are borne separately by the particular members. Right from the bidding phase, the project is usually subdivided into a number of parts that are then priced and executed independently by the members of the consortium. Not being a legal entity, the consortium is represented in dealings with the employer and third parties by a leading participant who also, as rule, prepares invoices for the employer (being paid to the common account) and distributes the received payments to other participants afterwards.

At the top management level, the consortium is usually managed by a board consisting mainly of the participants' executive directors. The board can resolve disputes and give instruction to the consortium's 'on site' administrative body which coordinates design, construction, accounting and engineering. The administrative body acts on the consortium's behalf, communicating on a daily basis with the employer's representatives or the contract administrator.

Relationships between the members of a consortium can take other forms. The works, for example, may be carried out separately with one shared profit and loss account, the balance of which is then distributed among the venture participants once the project is completed (perhaps on a pro rata basis), depending on the individual participants' share in the project.

A further example of a different kind of consortium is the 'tacit association' or *Beihilfegemeinschaft* in Germany. Such a 'silent association' comes into being where a contractor executes part of the works through a third party under the consortium contract but not via a subcontract. Despite being associated with the contractor, such a third party is not a party to the contract entered into with the employer (the main contract). This form is particularly useful where a part of the works necessitates the close cooperation of human resources, special equipment, technology, copyrights and know-how and where the contract for works cannot adequately regulate such part of the project.

Consortium agreements may contain various rights and obligations ranging from loose to strict forms of contractual relationships. It is common for the consortium agreement to deal with matters such as the purpose of the consortium, mutual rights and responsibilities, joint and several responsibility to the employer, bid evaluation, representation, decision-making, management, duration, account and payments, profit and loss distribution, insurance, bonds and guarantees, insolvency, termination, etc. Consortiums are often regulated by statute in civil law countries as they are recognized forms of business cooperation. This factor must be taken in consideration when negotiating or preparing a contract. In Poland, for example, a consortium can be created by a verbal agreement with the consequence of joint and several liability imposed by statute.

1.15.4 The joint venture

Joint ventures are more complex than consortiums. They exist as distinct legal entities – often with their own employees and objectives as well as financial, tax and

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legal issues to deal with. Joint ventures differ among jurisdictions and the actual form will depend on the requirements of particular contractors.

There also exist associations known as equity joint ventures (EJVs). In this case, a joint venture or partnership of a domestic and foreign entity operates under the umbrella of a limited liability company. In China, an EJV is a limited liability entity established by a Foreign Investment Entity and Chinese investors. Under Chinese law, all foreign business activity in China must be conducted in this way. In the UK, the principal types of joint ventures are contractual joint ventures, general partnerships, consortium companies, limited liability companies and hybrid companies. A consortium company, where each partner takes an agreed percentage of the issued share capital, is probably the most common form of joint venture in the UK (Venoit, 2009).

If there is no mandatory regulation prescribing the use of the EJV there can be a strategic interest in creating an EJV where business priorities include long-term business relationships, risk and liability limitation, tax and other practical issues.

ARGE

The *Arbeitsgemeinschaft* (ARGE) is a specific form of joint venture in Germany. Issued by the *Hauptverband der Deutschen Bauindustrie* (the German Construction Industry Association), it stands apart from other European jurisdictions by unifying sample forms of joint venture contracts in law.

Unlike the consortium, the ARGE is a legal entity (a *Gesellschaft des bürgerlichen Rechts* ('civil rights company')) whose characteristics are defined by the *German Civil Code* (BGB). The ARGE is independent from its shareholders, can sue or be sued and can act independently of its joint venture partners. In contrast to a common consortium whose participants perform the work separately, the ARGE participants execute the works as individual contractors, with the profits distributed and losses to be borne on a pro rata basis, depending on their shares in the ARGE. As an independent legal entity and a daughter company of its participants, the ARGE enters into the main contract with the employer.

At the bidding phase of a project, the future participants in the ARGE will first enter into the *Bietergemeinschaftsvertrag* ('contract on joint bid submission'). Sample forms of this contract are unified in law as well as in the wording of future ARGE contracts. The *Bietergemeinschaft* will turn into ARGE only when the contract is awarded. Otherwise, the *Bietergemeinschaft* lapses and does not give rise to ARGE.

An ARGE foundation agreement is valid when made orally but has to be concluded in writing for practical reasons. Partners may freely depart from the provisions of the BGB except in two specific cases. Case 1: no participant shall acquire a controlling stake in ARGE (be in control of it). Case 2: no participant shall be deprived of the option to leave ARGE.

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2 Civil Law and Common Law

2.1 Specifics of the governing law

International construction contracts address the most common problems and allocate most standard risks accordingly. However, no perfect contract exists because of the uniqueness and unforeseeable nature of this field. While governing laws contain mandatory clauses as a rule, adjustments in negotiating and drafting procedures increase the likelihood of ambiguities and may lead to invalid provisions. Therefore, the governing (applicable) law remains of great significance in international construction.

Governing (applicable) law is agreed upon by the parties as a general rule. Despite this, many international contracts do not contain a clause defining the choice of law. This may lead to conflict of law issues and, therefore, a different risk allocation than the one that the parties intended. A great deal of international construction takes place in less-developed countries with undeveloped or not fully adopted applicable law. Therefore, the characteristics of the applicable law are a key factor. These characteristics vary depending on their common or civil law origins.

2.2 Common law versus civil law: Differences and interconnections

When considering contract law in its widest sense, there are a number of key differences between the Anglo-American common law and European civil law systems. The Anglo-American system has its basis in precedents and builds on customs, pragmatic approaches and emphasizes the principle of contractual freedom. The European system, on the other hand, is comprised of civil codes and is based on Roman law and legal theory. The cornerstone of the civil law system is the importance of written law and mandatory provisions. This is of great significance as they can influence original agreements between parties.

International Construction Contract Law, First Edition. Lukas Klee.
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At present, both systems seem to be moving closer to each other (a similar process is taking place in the other systems such the sharia, socialist and religious law). The main differences are still apparent but, without doubt, the similarities of both systems prevail over the differences. In the United States, for example, legislators create lengthy Acts and large volumes of legislation which bind the courts. In the civil code countries, on the other hand, decisions of the superior courts often enjoy such respect that a new law is created on the basis of these decisions.

However, different approaches are especially visible in construction project management and dispute resolution. Let us consider the British example. In construction projects, the British invented some now 'traditional' sample contract forms used internationally that are highly developed but formal in nature. These formalities may give rise to disputes in numerous countries that follow European law. For example, the requirement to strictly adhere to the contractual procedures when dealing with claims for additional payment and extensions of time for completion, notification of claims in short periods of time and a risk of lapse of claim in cases of late notice, can all easily be seen as offending the good faith protection principle typical in civil law jurisdictions.

The sample contracts used in the large-scale international projects are often based on the common law. However, the large and rapidly growing building markets in the Middle East, South America, the former states of the USSR, Central and Eastern Europe and many African countries are heavily influenced by the civil law tradition. Therefore, tensions and uncertainty can arise when sample contracts based on the common law conflict with local governing laws and customs which are based on civil law.

A governing law can hardly be found which does not influence a particular contractual relationship. At least in cases where a contract fails to address an issue, there are the obligatory and mandatory provisions, precedents and rules of interpretation meeting the same purpose. The principles of freedom of contract and *pacta sunt servanda* (Latin for 'agreements must be kept') form the basis of construction law around the world, and ensure that there is a thriving international construction industry (Charrett, 2012). The governing law sets limits of the traditional *pacta sunt servanda* tenet.

From a legal point of view, the differences tend to occur in the following areas:

- delay damages (liquidated damages) versus contractual penalty;
- substantial completion versus performance;
- binding nature of adjudication awards;
- limitation of liability;
- lapse of claim due to its late notification (time bars);
- allocation of unforeseeable and uncontrollable risk to the contractor;
- contract administration (the engineer's neutrality and duty to certify);
- termination in convenience;
- time-related issues;
- quantification of claims;
- statutory defects liability; and
- performance responsibility: reasonable skill and care versus fitness for purpose.

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The above list is not exhaustive but serves as a summary of commonly encountered issues. Additional issues may include the right to interest, the approach to differing site conditions, changes in local laws, escalation of labour and materials, the impact of domicile in situations where some of the contractor's performance is executed in a different location than the project (e.g. fabrication of technological plant and design), local laws in respect to dispute resolution, the impact of implied terms and general aspects of commercial law, the right to suspend the works and the consequences of suspension, the rights of local subcontractors, limitation and prescription periods, liens, specifics of local public employers, etc.

There are other particularities and risks of local construction markets and international business. For example, the availability of skilled labour, labour law, local permits, necessary licences, government regulation, political instability, government expropriation of private property and corrupt judicial systems. Some of these risks could, however, become a reason for contract renegotiation or termination entitlement with different legal consequences in particular legal systems. For example, Latin American labour laws (which tend to be more protective of workers' rights than those in the United States) may require use of local labour and usually require significant social welfare contributions as strikes can be considered a legitimate tactic for negotiation in certain regions (Venoit, 2009).

For every large international construction project, it is highly recommended that the influence of the governing law and the efficiency of respective contractual provisions in the mentioned areas are evaluated. In the following passages, some of the issues mentioned will be dealt with in more detail to provide better context for the remainder of the book.

More information can be also found at: http://globalarbitrationreview.com/know-how/topics/73/construction-arbitration/.

The common law of Australia and the influence of statutory law by Donald Charrett (Australia)

Much of Australia's common law is not substantially different from the common law of England where it originated. While Australia is a federation of six States and two Territories, the High Court of Australia, the country's final court of appeal, has recently fostered the view that not only is there a 'common law of Australia' but also that it is 'a single and unified one'. However, not uniquely, the legislators of the nine Australian legal jurisdictions (including the Federal) have intervened to supplement or replace the common law in many areas.

As with other common law jurisdictions, the common law in Australia grew from its single English root. Applicable English common law was taken at a given point in time to the Australian Colonies established by England, and incorporated by the enactment of reception statutes. The received common law was subsequently and gradually changed by judgments in local courts, and increasingly, by local statutes.

In principle, judgments in other common law jurisdictions (particularly England, New Zealand and Canada, but also other ex-English colonies such as the USA, South Africa and Singapore) may be consistent with the common law in Australia, and relied upon by Australian judges if the factual circumstances are sufficiently similar: as Justice Paul Finn has put it, the

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High Court has viewed such foreign materials as being 'persuasive to the extent they could persuade'.

The major statutory departures from the common law relevant to construction law are:

1. 'fair trading' legislation (primarily the Federal *Australian Consumer Law*, also incorporated into State and Territory statutes);
2. proportionate liability in lieu of joint and several liability for a failure to take reasonable care (Federal, State and Territory); and
3. 'security of payment' reforms designed to enforce rights to payment across the contractual chain (State and Territory).

It would be hard to overstate the impact of the *Australian Consumer Law* (*ACL*) on commercial arrangements in Australia. The shadow of this statute (previously the *Trade Practices Act*) falls on every commercial transaction in Australia, and it has had a significant influence on conditioning acceptable commercial behaviour before and during the execution of construction contracts. Its effect is so pervasive that it can impact on the freedom of parties to contract, to an extent that is surprising to lawyers from other jurisdictions. Of the three types of statutory intervention listed above, it is the only one in which the various Governments of Australia have cooperated – albeit only recently – to produce uniform legislation that applies in all Australian jurisdictions.

Thus, conduct in the performance of a contract which might not amount to breach of contract can nevertheless be classified as misleading or deceptive conduct actionable under the *ACL*. For example, an architect who was retained to plan a residence to a price specified by the client, and represented that the house could be built for that price in accordance with the plans he drew up, was found to have engaged in misleading or deceptive conduct (*Coleman v Gordon M Jenkins & Associates Pty Ltd* (1993) 9 BCL 292), when the price was exceeded.

Lawrence C. Mellon (2009) has recently observed: '[I]n the United States, construction law is most accurately characterized as a morass of inconsistent legal principles, each of narrow application, varying significantly from jurisdiction to jurisdiction.' The same could be said of Australia where construction law consists of common law, except to the extent that the common law has been changed by statute law. Until recently there was little statute law that had an impact on construction law: the principle of freedom of contract prevailed, and tort law was almost exclusively common law.

That situation has now been overtaken by extensive (and generally different) legislation in each Australian jurisdiction in the areas referred to above. In particular, statutory adjudication of disputes over payment claims under many construction contracts has become the primary means of dispute resolution. This is considered in more detail in Chapter 11.

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2.3 Delay damages (liquidated damages) versus contractual penalty

Delay damages are a type of 'liquidated damages'. They are typically paid as lump sum compensation for damages. According to Anglo-Saxon tradition, liquidated damages are the sum agreed by the parties to the contract, authorizing the party suffering from the other party's default to receive a predetermined indemnity, following a particular breach. A court will decide on the validity or level of these damages unless such future compensation is specified in the contract (damages at large).

Pursuant to common law principles, liquidated damages will not be enforceable if they are designed to punish rather than compensate. Under the principles of equity, judges strive for fair solutions instead of enforcing the conditions which lead to unjust enrichment. Two conditions must be satisfied where liquidated damages are to be awarded. First, the sum must approximately match the actual or potential damage incurred. The purpose of damages is to return the plaintiff to their original position before the damage occurred. Damages are not an instrument of profit or unjust enrichment. Second, the damages must be a reasonably foreseeable consequence of the breach. If the liquidated damages are not recoverable, the employer will be left with the common law remedy for damages.

In construction disputes, the courts sometimes refuse to enforce liquidated damages because of the doctrine of concurrent delay in cases where contributory negligence can be proved.

Under English law, liquidated damages are generally regarded as the only remedy for the breach of contract to which the liquidated damages relate. In the absence of interim contractual milestone dates, liquidated damages for delay to completion will normally be the only damages recoverable for slow progress and then only if a delay to completion results. The employer may, however, have a right to terminate the contract. This depends upon the terms of the contract and the facts. Critical delay caused by the contractor's fraud, wilful misconduct, recklessness or gross negligence will not normally affect the position in regard to liquidated damages but may provide grounds for termination of the contract (Choat and Long at www.globalarbitrationreview.com).

In the civil law environment, liquidated damages may potentially be in conflict with the governing law in two instances. First, there is a liability limitation issue and, second, the issue of contractual penalty. Liability limitation will be discussed below in the Section 2.6.

As for the contractual penalty, this is a form of lump sum compensation for damages and, therefore, is similar to liquidated damages. However, unlike under common law, the contractual penalty acts as a sanction in addition to prevention and compensation. In civil law countries, the contractual penalty provision must be drafted in the contract precisely and in strict accordance with the governing law. Contractual penalties are often seen as invalid by judges if they are unreasonably high or not drafted in strict accordance with the governing law.

In Germany, for example, a contractual penalty (*Vertragsstrafe*) will not be enforceable if it is against good manners ('*Verstoss gegen die guten Sittten*' under §138 BGB) or against good faith ('*Verstoss gegen Treu und Glauben*' under §242 BGB). Furthermore, the judge can decrease the value of the contractual penalty if

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it is too high. The key aspects of an enforceable contractual penalty under German law are:

- It is efficient only if there is a default.
- Its daily value is not higher than 0.2 – 0.3 % of the contract price.
- The maximum amount of the penalty is not higher than 5% of the contract price (Vygen and Joussen, 2013).

2.4 Substantial completion versus performance

The common law distinguishes between such completion of work which allows the work to be used for an agreed purpose (substantial completion) and whole fulfilment of the contractual obligations (performance). Most sample forms of contracts used in international construction projects are therefore based on the substantial completion concept from the common law. This approach presumes the take-over of the work by the employer after substantial completion. Of note is that the contractor is not discharged of their contractual obligations until the performance certificate is issued. It often applies, however, in the civil law countries (pursuant to civil codes) that the 'work is performed if completed and handed over'. In some European jurisdictions, there may be disputes about when the statutory warranty for defects is triggered (see below the Section 2.13).

The principle of deemed acceptance exists, for example, under German law. If the employer refuses to accept the works even though they would be obliged to do so (if the works are in fact free of defects and materially completed), acceptance is deemed to have taken place. Deemed acceptance is also assumed where the employer takes possession of the works or starts using the works as per their intended purpose. The principle of deemed acceptance may be waived by the parties by explicit agreement (Kremer at www.globalarbitrationreview.com). French courts may consider that there is an implied acceptance of the works (*réception tacite*) in circumstances where the employer has taken possession of the works or paid nearly all of the contract price. However, this is subject to the terms of the contract not providing otherwise (Gillion and Rosher at www.globalarbitrationreview.com).

In South Africa, there is no provision in common law that determines whether or not the works are completed. It is therefore advisable for parties to have adequate procedures and organization to cope with the administrative matters in monitoring, updating and managing programmes and assessing whether completion has been achieved. In practice, the contract will provide a procedure for certification of completion of the works; and the contracts generally contain a provision that where the employer takes occupation and possession of the works and starts to use them, the works will be deemed to have been completed. However, it is emphasized that this only arises as part of a contractual provision and not under governing law (Hoeben at www.globalarbitrationreview. com).

2.4.1 Taking-over of the works

A common subject of disputes is whether the work was substantially completed and should therefore be taken over with the consequence that the employer cannot

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impose contractual penalties (or delay damages). In the ICC case no. 10847 (2003) (ICC, 2012), for example, the contractor claimed that the works met the requirements for the issuance of a taking-over certificate at a particular date, in that they were capable of being used for the purpose for which they had been designed. The engineer had refused to issue the taking-over certificate at that date on the basis that certain finishing works were outstanding and that certain items prevented some testing and commissioning operations. The tribunal declared that for the issuance of the taking-over certificate, the works must be at a stage so as to allow for the beneficial use of the facility being constructed. In the tribunal's opinion, the items of work that can properly be undertaken after issue of the taking-over certificate are items that do not interfere with the employer's beneficial use, such as architectural finishing works, repair work, fencing, landscaping and demobilization. On this basis, the tribunal saw no reason to overturn the engineer's decision and dismissed the contractor's claim that the taking-over certificate should have been issued on an earlier date.

Under the FIDIC forms (1999, 1st Edition) Sub-Clause 10.1:

> The contractor may apply by notice to the engineer for a taking-over certificate not earlier than 14 days before the works will, in the contractor's opinion, be complete and ready for taking over. If the works are divided into sections, the contractor may similarly apply for a taking-over certificate for each section. The engineer shall, within 28 days after receiving the contractor's application: (a) issue the taking-over certificate to the contractor, stating the date on which the works or section were completed in accordance with the contract, except for any minor outstanding work and defects which will not substantially affect the use of the works or section for their intended purpose (either until or whilst this work is completed and these defects are remedied); or (b) reject the application, giving reasons and specifying the work required to be done by the contractor to enable the taking-over certificate to be issued. The contractor shall then complete this work before issuing a further notice under this Sub-Clause. If the engineer fails either to issue the taking-over certificate or to reject the contractor's application with the period of 28 days, and if the works or section (as the case may be) are substantially in accordance with the contract, the taking-over certificate shall be deemed to have been issued on the last day of that period.

However, according to Sub-Clause 11.9:

> Performance of the contractor's obligations shall not be considered to have been completed until the engineer has issued the performance certificate to the contractor, stating the date on which the contractor completed his obligations under the contract. The engineer shall issue the performance certificate within 28 days after the latest of the expiry dates of the defects Notification Periods, or as soon thereafter as the contractor has supplied all the contractor's documents and completed and tested all the works, including remedying any defects. A copy of the performance certificate shall be issued to the employer. Only the performance certificate shall be deemed to constitute acceptance of the works.

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Regularly, the governing law must be considered in terms of the taking-over procedures. How it was mentioned, in France, a so-called '*réception tacite*' will arise if the employer simply takes possession of the works under certain conditions both in civil and public tender (Wyckoff, 2010). In France, according to the Cour de Cassation in order to determine if any implied approval of the employer to take over the works occurred, the courts should see if the employer has demonstrated an intention to approve the works. There are three material conditions of such implied approval: (1) the works are nearing completion; (2) the employer has taken possession of the works and (3) nearly all the contract price has been paid. CCAG (the French standard form for public construction works) states for example that the employer shall not use the works without approving them first. This is to protect contractors against employers delaying the approval and the taking-over procedure (Teillard, 2014).

According to the New Czech Civil Code (§2628), the employer is not entitled to refuse to take over the works because of minor defects that by themselves or in connection with others do not prevent the works from being used for their purpose both functionally and aesthetically, nor do they constrain the use of the works in a significant manner.

2.5 Binding nature of adjudication awards

Settlement of disputes in construction projects requires speed, an informal approach and expertise. This is why adjudication is commonly used. In practice, we most frequently deal with Dispute Adjudication Boards (DABs). The parties may submit their dispute to a DAB for its judgment. The DAB must decide in compliance with the process most clearly defined in the contract. Sometimes, it is also a statutory adjudication, as is the case in the United Kingdom, where either of the participants of a construction project can use the opportunity to resolve a dispute in statutory adjudication within 28 days.

In the civil law jurisdictions, the decisions handed down by DABs may be persuasive in nature but not binding or enforceable. In the common law jurisdictions, on the other hand, the decision is often final and binding if the parties do not appeal it within the contractually agreed period of time.

If the contracting parties (under a governing civil law) want to make a DAB's decision enforceable, they can, for example, modify the DAB's status to ad hoc arbitration. The parties can agree to use the arbitration clause for an institutional arbitration court (or for an additional ad hoc arbitration) so that this arbitration court (or the arbitrator or the arbitrators ad hoc) would become the authority to examine the DAB's award or resolution, should one of the contracting parties challenge the award or resolution via a lawsuit. For more details, see Chapter 11.

2.6 Limitation of liability

In common law, there is a tradition of highly esteeming the principle of contractual freedom and it is generally allowed to contractually limit liability, including liability for damages. In civil law countries, however, the governing law sometimes contains

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provisions that do not allow the imposition of such limits. For example, provisions may be encountered that stipulate that claims for damages may not be waived before an obligation is breached that gives rise to damage.

In the majority of legal systems, however, such limitations are acceptable. Under English law, such provisions can be effective but may be subject to the *Unfair Contract Terms Act* (1977).

Under French civil law, limitations and exclusions of contractual liability are normally effective. There are, however, two broad exceptions: (1) where the breach was caused by a *faute dolosive* (i.e. typically fraud or a particularly serious wilful misconduct) or *faute lourde* (i.e. a serious breach, which often corresponds to the common law concepts of recklessness or gross negligence), both defined on a case-by-case basis by the courts; and (2) where the contractual liability provided for is considered derisory or insignificant. Courts will consider the economic rationale for the clause. These principles apply even if the contract is silent as to such behaviour and the parties cannot agree otherwise. Limitation and exclusion clauses are not valid where the contractor is liable by reason of a law that is a matter of a public policy (such as decennial liability). In principle, it is not possible to exclude or limit liability in tort (Gillion and Rosher at www.globalarbitrationreview.com).

2.7 Lapse of claim due to its late notification (time bars)

Construction contracts usually contain provisions that establish a duty to notify a claim for additional payment or extension of time in a certain period of time. If the claim is not notified, it is 'time-barred'.

When considering time bars, it is very important to evaluate: (1) if it is possible to contractually agree on such a consequence within a particular jurisdiction; and (2) what exactly the consequence is of filing a claim notice out of time.

The precedents in respect of the admittance and status of contractually time-barred claims are generally unambiguous across different jurisdictions. Every particular time-barred claim must be evaluated individually in respect of the particular delivery method, related risk allocation, nature of the claim and the limits imposed by governing law. This issue is dealt with extensively in Chapter 9.

2.8 Allocation of unforeseeable and uncontrollable risk to the contractor

In some construction projects it can be efficient to allocate the majority of risk to the contractor. This is especially so where it is possible to transparently control and evaluate the risks and allow for risk contingencies in the contract price. The knowledge of the total contract price (no matter how high it is) may be an employer's priority in certain cases. In common law jurisdictions, the contract will be usually respected and even an extreme risk shift to the contractor will be protected by the governing law. More complications can be encountered in civil law jurisdictions and the parties to the contract must recognize the existence of the following principles of civil law:

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- good faith (good manners) protection;
- imprévision;
- protection of the weaker party;
- *force majeure;*
- hardship.

Such risk allocation has its limits also in common law jurisdictions. Parties to the contract must also be aware of the potential effects of the following principles applicable to both in common law and civil law countries:

- frustration of purpose;
- impossibility;
- impracticability.

2.8.1 Principle of good faith (good manners) protection

In civil law countries, local civil codes usually contain a general provision protecting and requiring the parties to the commercial, contractual relationship to act in good faith, to be fair and comply with good manners. Good faith lacks a universal definition but it is usually perceived as a sincere intention to deal fairly with others. Similar provisions may be encountered that protect the public order in general.

For example, §307 (1) of the *German Civil Code* (BGB) states that the terms and conditions are void if they unreasonably disadvantage the contracting party that accepted them. In practice, this provision is applied in cases of extremely onerous and ambiguous conditions. In Germany, this provision does not apply to consumer protection only, but also to contractual relationships between business people.

The provision reflecting *Inhaltskontrolle* (Test of reasonableness of contents) states (English translation):

1. Provisions in standard business terms are ineffective if, contrary to the requirement of good faith, they unreasonably disadvantage the other party to the contract with the user. An unreasonable disadvantage may also arise from the provision not being clear and comprehensible.
2. An unreasonable disadvantage is, in case of doubt, to be assumed to exist if a provision:
   1. is not compatible with essential principles of the statutory provision from which it deviates, or
   2. limits essential rights or duties inherent in the nature of the contract to such an extent that attainment of the purpose of the contract is jeopardized.

A further example is §242 of BGB reflecting *Leistung nach Treu und Glauben* (Performance in good faith) which states (English translation):

> An obligor has a duty to perform according to the requirements of good faith, taking customary practice into consideration.

Any conduct must therefore comply with the principles of good manners and mutual honesty. In civil law jurisdictions the provisions can stipulate similar matters to the

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New Czech Civil Code which is based on traditional and modern civil codes from different civil law jurisdictions, for example:

- Agreements breaching good manners and public order are prohibited.
- Legal conduct must follow both good manners and law in content and purpose.
- Legal conduct which goes against good manners and law is invalid.
- The court, even ex officio, will take into account the invalid nature of the legal conduct which evidently goes against good manners or law or overtly violates public order.
- Everybody is obliged to act honestly in contractual relationships.
- Nobody is allowed to benefit from their own dishonest or unlawful act or illegal status they themselves have caused or are responsible for.

As a further example, Article 124 of the *Egyptian Civil Code* provides that:

> A party who has committed a mistake cannot take advantage of the mistakes in a manner contrary to the principles of good faith. Such a party, moreover, remains bound by the contract, which he intended to conclude, if the other party shows that he is prepared to perform the contract.

Under French law, there is a general duty to perform contracts in good faith, for example:

1. The employer is under a duty to cooperate with the contractor. Courts have considered that this duty to cooperate includes an obligation not to unduly interfere with the contractor's works. Any undue interference of the employer with the works (*immixtion caractérisée*) may excuse the contractor from liability.
2. Courts may prevent a party from relying on a termination clause if it is not invoked in good faith. Similarly, the general right to suspend performance if the other party fails to perform its own obligations (principle of *exception d'inexécution*) must be invoked in good faith.
3. While the employer is entitled to rely on a pre-agreed damages clause when a particular obligation has been breached, this would (in principle) be subject to the general requirement that contracts must be performed in good faith. Courts may modify the pre-agreed amount where this amount is 'manifestly excessive or derisory' (Gillion and Rosher at www.globalarbitrationreview.com).

The purpose of such provisions is to provide the parties with ultimate protection against unfair behaviour and extreme dishonesty and injustice. A similar approach is contained in the *Unidroit Principles of International Commercial Contracts (2010)*:

> ARTICLE 1.7 (Good faith and fair dealing)
>
> 1. Each party must act in accordance with good faith and fair dealing in international trade.
> 2. The parties may not exclude or limit this duty.

In common law jurisdictions, equity is a set of legal principles that supplement strict rules of law where the application of such rules would operate harshly. Equity has a

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similar purpose as the general provisions in civil codes and it is commonly said to 'mitigate the rigour of common law' by allowing courts to use their discretion and apply justice in accordance with natural law. In practice, equity no longer applies in English law so there is no general duty of good faith as in civil law countries. Modern equity is limited to trusts and certain remedies such as injunctions.

In recent cases, certain developments have been encountered which seem to be aimed at establishing a good faith obligation as an implied term. Here are some examples.

In *Yam Seng PTE Ltd v International Trade Corporation Ltd* (2013), the judge ruled that:

> I doubt that English law has reached the stage, however, where it is ready to recognize a requirement of good faith as a duty implied by law, even as a default rule, into all commercial contracts. Nevertheless, there seems to me to be no difficulty … in implying such a duty in any ordinary commercial contract based on the presumed intention of the parties.

The English Court of Appeal in *Mid Essex Hospital Services NHS Trust v Compass Group UK and Ireland Ltd* took a stricter view, commenting that:

> [T]here is no general doctrine of 'good faith' in English contract law, although a duty of good faith is implied by law as an incident of certain categories of contract [i.e. such as in employment contracts and partnership deeds] … If the parties wish to impose such a duty they must do so expressly.

Another case is *TSG Building Services plc v South Anglia Housing Ltd* [2013] EWHC 1151 (TCC) where the judge ruled that:

> I do not consider that there was as such an implied term of good faith in the contract. The parties had gone as far as they wanted in expressing terms in Clause 1.1 about how they were to work together in a spirit of 'trust, fairness and mutual cooperation' and to act reasonably. Even if there was some implied term of good faith, it would not and could not circumscribe or restrict what the parties had expressly agreed in Clause 13.3, which was in effect that either of them for no, good or bad reason could terminate at any time before the term of four years was completed.

In general, English law still has not accepted the good faith obligation as an implied term and relies on express terms of the contract. There has been an increase of good faith duties expressly stipulated in English contracts (e.g. in NEC forms: 'the duty to act in a spirit of mutual trust and cooperation') in recent years. The trend of such express terms is positive and, without doubt, useful for all participants (mainly the employer, contractor, designer and contract administrator) of an international construction contract.

In the USA, the *Uniform Commercial Code* has enshrined in legislation the obligation of good faith in the performance of contracts. In Metcalf Construction Co. v. United States, (U.S Ct. of Appeals for the Federal Circuit, Case No. 2013-5041, Feb. 11, 2014) the U.S. Court of Appeals for the Federal Circuit dealt with a breach

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of the implied duty of good faith and fair dealing (in case of Government misinterpretation of differing site conditions clause) and reversed a decision of the U.S. Court of Federal Claims. The Court of Appeals decided that the Government is held to a higher standard with regard to the duty of good faith and fair dealing owed to the contractor than had been applied by the claims court (for more information see http://www.constructionrisk.com). In Australia, the High Court has not considered the issue, but there is case law which indicates that there may be a general duty of good faith in the performance of some contracts in Australia (Charrett, 2013).

Experience also shows that in many countries the participants of international construction projects tend to misuse their position and the contract. The general motivation is short-term gains being set as priorities – even in large public projects. A typical case is a situation where the contract administrator (the engineer) has, for example, 14 days to approve the contractor's design or time programme and waits until the last day of this period, causing critical delay. This in turn allows the employer to impose contractual penalties/delay damages. Another example of conduct done 'in bad faith' is where the employer creates artificial reasons to refuse taking over the works to impose contractual penalties/delay damages.

In both legal systems it is not universally accepted whether it is appropriate to disrupt commercial relationships with general good faith obligations. This can be perceived as restriction of contractual freedom that creates uncertainty. In both legal systems it is, however, accepted as necessary to evaluate the actual context and intention of the parties. There is no universal, international benchmark of 'fairness' – much of which depends on contextual and cultural aspects.

General principles of good manners and good faith protection can lead to invalidity of a contractual provision or even the contract. A good example of a provision at risk of being held to be invalid is Sub-Clause 4.12 of the FIDIC EPC form/1999 Silver Book, under the heading 'Unforeseeable Difficulties'. This Sub-Clause reads:

> Except as otherwise stated in the contract, the contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the work; by signing the contract, the contractor accepts total responsibility for having foreseen all difficulties and costs of successfully completing the works; and the contract price shall not be adjusted to take account of any unforeseen difficulties or costs.

Some authors speak about "legitimate interests of both parties" relate to the issue of efficient risk allocation. In terms of the choice of delivery method for example, the employer has in general two choices. Formulate the objectives of the delivery in global fashion, and turn over the detailed execution to the contractor (design-build) or provide the contractor with detailed description of the works (design-bid-build). It is not in "legitimate interests of both parties" to transfer a completeness risk to the contractor in the latter case. This is why the Sub-Clause 4.12 above or for example the Sub-Clause 5.1 of FIDIC EPC/1999 Silver Book is seen as invalid in Germany (Kus, Markus and Steding, 1999).

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2.8.2 Imprévision

Lawyers from the common law jurisdictions will often insist on the *pacta sunt servanda* principle, having its traditional limitations in the *rebus sic stantibus* tenet (Latin for 'things thus standing'). The latter, however, should only be used in exceptional cases, as the contractor ought to be able to assess the foreseeable risks in their bid.

Obviously, some uncertainties may result in contract variations or termination. The *French Civil Code* traditionally makes reference to the so-called '*théorie de l'imprévision*', i.e. the situation (obstacle), which was not foreseeable and is now complicating the realization and, therefore, is providing the contractor with the right to claim increased costs and/or to terminate the contract. This theory is typical of administrative law and imposes on the public authority the obligation to help the contractor if the equilibrium of the contract is shaken. The grounds for use of this theory can be extremely diverse, such the increase in cost and wages, interventions by public authorities, social unrest, forces of nature, etc. (Malinvaud, 2010).

An example of the price escalation clause is often quoted, leading to extreme impact on price. In this situation, the common law position, based on the *contra proferentem* (Latin for 'against [the] offeror') principle, would likely be that the price escalation clause applies as it is written in the contract along with all the adverse impacts. The civil law position might be that the clause cannot be, as per the imprévision doctrine, construed in a manner which produces results the parties could not have reasonably intended.

Pursuant to the Article 147 (2) of the *Egyptian Civil Code* (1949), it applies that when contractual performance has resulted from an extraordinary or unforeseeable event which is general in nature, not impossible, extremely adverse, or just adverse to the extent to which it poses for the debtor a threat of tremendous loss, then the judge may, regarding the circumstances and having taken into account both parties' concerns, reasonably reduce the obligation of fulfilment which became excessive. Any agreement which stipulates otherwise is invalid.

Similar provisions can be found in the legal codes of the following states (Seppala, 2012):

- Algeria (Article 107 of the Civil Code);
- Bahrain (Article 130 of the Decree No. 19 of 2001);
- Iraq (Article 146 of the Civil Code);
- Jordan (Article 205 of the Civil Code);
- Kuwait (Article 198 of the Civil Code);
- Libya (Article 147 of the Civil Code);
- Qatar (Article 171 of the Civil Code);
- Sudan (Article 117 of the *Private Law Transaction Act*);
- Syria (Article 148 of the Civil Code);
- United Arab Emirates (Article 249 of the Civil Code); and
- Yemen (Article 211 of the Civil Code).

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2.8.3 Protection of the weaker party

Provisions protecting the weaker party in contractual relationships are sometimes encountered in civil codes. For example, §1800 (2) of the *New Czech Civil Code* reads:

> [W]hen a 'take it or leave it' contract contains a clause, which is particularly disadvantageous for the weaker party, without reasonable cause for it, especially if it deviates seriously and without specific reason from the usual conditions agreed in similar cases, the clause is invalid.

A similar approach is also encountered in English law under the *Unfair Contract Terms Act* 1977 (UCTA). Broadly, this provides that: (1) a term of a contract that excludes or restricts liability for negligence must be reasonable in all the circumstances; and (2) where one party (A) deals upon the other party's (B's) standard terms of business, a clause that excludes or restricts B's liability for breach of contract must also be reasonable in all the circumstances. If these clauses are not reasonable, they will not be enforceable. A standard form of contract published by an industry body (e.g. FIDIC) does not constitute 'standard terms of business' unless a party habitually uses a particular standard form for all its construction business undertakings (Choat and Long at www.globalarbitrationreview.com).

2.8.4 *Force majeure*

In most civil codes a definition of the *force majeure* or a similar principle can be found. This is contrary to the common law which is missing such a definition. In common law, it will be impossible to rely on a statutory definition where the contract fails to define the meaning of *force majeure*. Thus, it will not be possible to avoid the *force majeure* responsibility without specifying so in the contract.

The aim of the *force majeure* provision is to relieve a party of its performance under the contract upon the occurrence of an event where unforeseeable consequences cannot be predicted while being beyond the control of the contracting parties. In the French original (Malinvaud, 2010) 'la force majeure se définit comme en droit privé, comme un événement imprévisible, irrésistible, extérieur aux parties contractantes'. In most legal systems, *force majeure* events excuse contractual performance, but unless stated otherwise in the contract, do not create an entitlement for additional payment. However, according to its original meaning, *force majeure* entitles compensation in favour of the contractor. This right is, however, limited to prejudice directly attributable to the *force majeure* event. It is not extended either to lost profit due to the termination of the work following the occurrence of the event of *force majeure* or to the loss caused by the demobilization of the equipment and personnel. The events that constitute *force majeure* are diverse and include forces of nature, legal, social or economic events, such as a strike, for example (Malinvaud, 2010).

Even the best-drafted *force majeure* clause in a contract can be in conflict with similar provisions of the governing law and this can cause confusion in realization and in settlement of disputes. It is therefore always necessary to formulate such a provision in respect of the governing law or to rearrange the wording of a *force majeure* clause where a sample form of contract is to be used. A full enumeration of the *force majeure* events may limit existing statutory definitions. For example,

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extreme weather conditions and severe industrial disputes have been identified as *force majeure* events in common law. In contrast, in many parts of developing world, these events would be considered reasonably foreseeable (Venoit, 2009).

Under Brazilian law, if the contract does not establish a limited list of events considered as *force majeure* which are all unavoidable, unforeseeable events and not caused by the actions of the parties, it may affect a party's right to relief. Nevertheless, such an event should have taken place after the execution of the agreement. Additionally, the legal principle of *force majeure* is not a matter of mandatory law and may be waived by the parties, should they opt to allocate all the risks to one or other singular party, or *force majeure* events and consequences can be adapted and/or excluded by the agreement (Marcondes, Salla, Nakagawa, and Diniz at www.globalarbitrationreview.com).

Under French law, for an event to constitute legal *force majeure*, it must:

1. make performance of the contract impossible, not merely impracticable;
2. have been unforeseeable at the time the contract was made;
3. have been 'irresistible' in the sense that the event could not have been avoided or surmounted by the party affected; and
4. be external to the party invoking it.

The practical effect of 'legal' *force majeure* is merely that each party is released from the obligations affected by the *force majeure* event, until the *force majeure* ceases to exist. Neither party can claim additional compensation directly on account of legal *force majeure*. The contract can define *force majeure* events and their consequences (Gillion and Rosher at www.globalarbitrationreview.com).

Under Spanish law, no person is liable for non-foreseeable events or, if foreseeable, inevitable (Article 1105 of the Civil Code that is not mandatory). The event must be unforeseeable or inevitable for the person to invoke their lack of liability (Iglesia and Fortún at www.globalarbitrationreview.com).

Organizations such as FIDIC have departed from using the *force majeure* term and have adopted clearer expressions such as 'exceptional risks' with exact contractual definitions to avoid the above-mentioned problems and confusion in international projects.

Under FIDIC DBO:

> 'Exceptional Event' means an event or circumstance which is (a) beyond a party's control; (b) which the party could not reasonably have provided against before entering into the contract; (c) which having arisen, such party could not reasonably have avoided or overcome; and (d) which is not substantially attributable to the other party.

2.8.5 Hardship

Another similar principle known as 'hardship' is perceived as a civil law tenet. As defined by UNIDROIT principles, where a party claims hardship, it is entitled to a renegotiation of terms and, in the absence of agreement, to rescind the contract or to amend it on 'just terms' wherever possible. The hardship must be quite substantial, though not as severe as would be required for the application of the common law doctrines of impossibility or commercial impracticability.

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In Brazil, Article 478 of the Civil Code establishes that the debtor may terminate the contract if the obligation becomes excessively expensive as a result of extraordinary and unforeseeable events, leading to an extreme and disproportionate advantage to the other party. The hardship hypothesis is regulated in Article 480, and allows the affected party to request the judge/arbitrator to modify the contract in order to make it feasible (Marcondes, Salla, Nakagawa, and Diniz at www.globalarbitrationreview.com).

Under Section 313 of the BGB in Germany, the contractor may seek adjustment of the contract price if unforeseen events that are not within the sphere of either party have affected the contract and its performance to such extent that either party could reasonably request a contract adjustment (Kremer at www.globalarbitrationreview.com).

2.8.6 Frustration of purpose

The common law principle of frustration of purpose (i.e. frustration of the purpose of the contract where the purpose was known to both parties when executing the contract) is the next example of a general principle that can influence contractual risk allocation.

Based on the English case of *Davis Contractors v Fareham UDC*, 2 All ER 145, the common law's concept of frustration can be applied where fulfilment of a certain contractual obligation differs a lot from the original contract arrangement due to an external circumstance, but without any breach of either party's contractual obligations.

Under English law, where a supervening event or change in circumstances occurs which renders performance of the contract radically different from what the parties contemplated when they made their contract and for which the contract does not expressly allocate the risk or imply that, the contract is automatically 'frustrated' and the parties are discharged from further performance of it. Payments are governed by the provisions of the *Law Reform (Frustrated Contracts) Act* (1943). In general, these provide for payments made for which no benefit has been received to be repaid and for benefits received for which no payment has been made to be paid for. Frustration is extremely rare. The fact that the contract has become more expensive to perform than had been anticipated does not on its own amount to frustration (Choat and Long at www.globalarbitrationreview.com).

2.8.7 Impossibility

To distinguish frustration of purpose from impossibility, it can be said that in frustration cases, the party seeking discharge is not claiming that it 'cannot' perform, in the sense of inability. Rather, it is claiming that it makes no sense to perform, because what it will get in return does not have the value the party expected at the time they entered into the contract.

Generally speaking, if a court concludes that performance of the contract has been rendered 'impossible' by events occurring after the contract was performed, the court will generally discharge both parties.

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In the USA, since *Taylor v. Caldwell* (122 Eng. Rep. 309 (K.B.1863)) – the case that gave rise to the modern doctrine of impossibility – it has been held, rather consistently, that impossibility is an excuse for non-performance where there has been a fortuitous destruction, material deterioration, or unavailability of the subject matter or tangible means of performance of the contract (Perillo, 2007).

A similar approach is encountered in civil law jurisdictions. Article 188(1) of the *Qatar Civil Code* provides, in the context of bilateral contracts, that if the performance by one of the contracting parties of his obligation(s) becomes impossible (that is, not merely difficult) due to an extraneous cause beyond his control, the contract shall be dissolved – automatically, by force of law. Article 188(2) confirms that in the event of partial impossibility (or where the event did not have a permanent effect), the creditor may, as his option, request performance of those obligations that remain possible to perform, or request the dissolution of the contract. Where no external events are at play, the contractor will be responsible for performing his obligations in full, even where to do so is burdensome (Al Naddaf and Kelly at www.globalarbitrationreview.com).

If it is impossible for the contractor to fulfil a certain obligation under the contract, the contractor is 'freed' from performing such obligation. If such impossibility is accompanied by the default of the contractor, the employer may be entitled to damages. If performance of the obligation is impossible for reasons other than a fault of the contractor, the contractor is excused from its performance, as is the employer from the corresponding consideration, in general, payment of the respective contract price. The employer may also – depending on the nature of the obligation that has become impossible – withdraw from the contract (Kremer at www.globalarbitrationreview.com).

2.8.8 Impracticability

The doctrine of impracticability in the common law of contracts excuses performance of a duty, where that duty has become unfeasibly difficult or expensive for the party who was to perform it. Impracticability is similar in some respects to the doctrine of impossibility because it is triggered by the occurrence of a condition which prevents one party from fulfilling the contract. The major difference between the two doctrines is that while impossibility excuses performance where the contractual duty cannot physically be performed, the doctrine of impracticability comes into play where performance is still physically possible, but would be very burdensome for the party whose performance is due. Thus, impossibility is an objective issue, whereas impracticability is a subjective issue for a court to determine.

It is now recognized, for example, after the case *Transatlantic Financing v. U.S.*, 363 F.2d 312, 315 (D.C.Cir. 1966); 41Tul.L.Rev. 709 (1967); 8 Wm. & Mary L. Rev. 679 (1967) that 'A thing is impossible in legal contemplation when it is not practicable; and a thing is impracticable when it can only be done at an excessive and unreasonable cost.' When the issue is raised, the court is asked to construct a condition of performance based on changed circumstances, a process which involves at least three reasonably definable steps. First, a contingency – something unexpected – must have occurred. Second, the risk of the unexpected occurrence

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must not have been allocated either by agreement or by custom. Finally, occurrence of the contingency must have rendered performance commercially impracticable.

An illustration of a contingency that alters the essential nature of the performance arose in *Mineral Park Land v. Howard* (172 Cal. 289, 156 P. 458 (1916), 4 Cal. L. Rev. 407 (1916). In this case, the defendant agreed to fill the requirements of gravel needed for a bridge-building project by removing it from the plaintiff's land and agreed to pay for it at a rate of 5 cents per yard. The defendant removed all of the gravel above water level but refused to take gravel below the water level on the grounds that the cost of removal would be ten to twelve times the usual cost, because of the need to use a steam dredge and to employ a drying process. The court held that the defendant was excused from performing the duty. It reasoned that though it was not impossible to remove the additional gravel, for practical purposes no additional gravel was available and therefore, performance was excused because of the non-existence, for practical purposes, of the subject matter of the contract. In exceptional cases such *ALCOA v. Essex Group*, 499 F. Supp. 53 (W.D.Pa.1980); *Florida Power and Light v. Westinghouse Elec*., 826 F.2d 239 (4th Cir. 1987), impracticability was the foundation of a defence solely on the basis of increased cost (Perillo, 2007).

2.9 Contract administration (The Engineer's neutrality and duty to certify)

A construction project has two direct participants: the employer and the contractor. In addition to these parties, a construction project regularly sees the participation of the 'engineer' hired by the employer, who conducts the 'contract administration', the scope of which depends on the particular project and the authority delegated to the engineer by the employer. The involvement of the engineer is part of a long tradition from the Anglo-American system.

Within their duties, the engineer is a neutral third party (representing mainly the tradition and concept of an independent consulting engineer), who is professionally skilled to maintain a fair balance between the contractor and the employer.

The engineer should support the most convenient solutions within contractual limits. Therefore, they are key to any successful construction project. Appointed and provided by the employer, the engineer will work at the employer's expense. However, the engineer remains neutral to a certain extent. In European law, this presumption faces misunderstandings. The engineer tends to be placed in a difficult position when working on large international construction projects in the civil law countries. This is because employers from these countries often fail to understand or respect the engineer's mandatory impartiality. This can lead, sometimes, to a collapse of project management and contract administration, as well as damages and delay.

Bunni (2005) deals with the engineer under FIDIC forms and his role of a designer, employer's agent, supervisor, certifier, adjudicator and quasi-arbitrator, recognizing his proactive, reactive and passive duties and authority under the contract. In a traditional way, the consulting engineer is perceived to fulfil a broad scale of activities, starting with the preparation of the design for tender (including specifications and bill of quantities), the preparation of all documents to obtain a competitive price in finding a competent contractor and advising on the selection of the contractor. Once work starts, the engineer will supervise and inspect the work

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in order to ensure conformity with the design requirements and administer the contract, to deal with the situations as they arise, to certify and to act as an adjudicator of disputes. In almost all of the above-mentioned activities and roles, a conflict with the governing law may be encountered, mainly in the civil law countries.

2.10 Termination in convenience

Another widely used clause in international construction contracts is unilateral contract termination by the employer at their own discretion ('in convenience'). This provision is typically encountered within public contracts which are not subject to negotiation. The contractor who is allowed to negotiate over the contract should not accept such a provision without further indemnification (granted in cases of termination in convenience) as this kind of termination can easily be misused.

When insisting on the necessity of such a provision, the employer can put forward as an argument the wish to avoid indemnity payments to the contractor, which may arise due to unauthorized contract termination. The provision applies in most US jurisdictions. On the other hand, employers using FIDIC forms should not terminate the contract in order to execute the works themselves or to arrange for the works to be executed by another contractor (after a termination in convenience). The contractor will then receive payment for all already completed work plus all costs that would have been reasonably incurred by the contractor in the expectation of completing the works. The FIDIC Contracts Guide reminds us of the problematic nature of this provision, alleging that it can be in conflict with governing law. A similar provision is encountered in the German standard §8 (1) *Vergabe- und Vertragsordnung für Bauleistungen, Teil B* where it states that the employer may terminate the contract at any time before the work is finished. Termination in convenience cannot be considered a typical provision for any particular system but – in a civil law context – the provision (if wrongly drafted) will be subject to invalidity for going against good manners or being in conflict with mandatory provisions for contract termination. For example, under Brazilian civil law, the parties are bound by their contract; however, should the agreement be silent on that matter, the employer may impose early termination unilaterally, but must bear all the costs incurred up to that point by the contractor. The employer may also be liable to compensate the contractor for its potential direct and indirect damages caused by the termination (Marcondes, Salla, Nakagawa, Diniz at www.globalarbitrationreview.com).

In England, on the other hand, the employer cannot usually exercise the power to omit work in order to employ another contractor to do that work. If the employer does so, this will be a breach of contract entitling the contractor to damages (normally loss of profit on the work omitted).

The same principle may apply to clauses permitting the employer to terminate at will. In the event that the employer exercised its rights under such a clause in order to give the work to another contractor, then, unless the clause was clearly worded so as to enable the employer to do this, the contractor would be entitled to claim that the employer had repudiated the contract and could recover damages from the employer. Such damages would probably include loss of profit that the contractor would have made had it been permitted to complete the contract (Choat and Long at www.globalarbitrationreview.com). Termination in convenience clause

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under English law was considered recently in TSG Building Services Plc v South Anglia Housing Limited [2013] EWHC 1151 (TCC).

Is an employer in breach of contract prevented from terminating the contract for its convenience? by Cecilia Misu (Germany)

Convenience termination clauses, originally used in public procurement as a tool to allocate risk to help prevent government waste, have spread to the private sector and can be found nowadays in all major standard contracts used in the international construction industry. Such clauses provide the employer with the option to terminate the remaining balance of the contractual work at any given time for reasons other than contractor's default, without having to establish any grounds, and/or (usually) pay lost profit to the contractor for the unperformed works.

Due to the ongoing financial recession and its effects on the global construction economy, employers may be tempted to use convenience clauses as additional bargaining power to lower construction costs or to benefit by abandoning a project partway through, if it is financially attractive to do so.

In view of the above and considering that at a particular point in time during the performance of a contract, each party may well be in breach of one of its multiple contractual obligations, and given that a termination for the employer's convenience involves a substantial financial risk for contractors, it is questionable whether an employer in breach of contract can be prevented from exercising its right under the convenience clause.

There is little authority available in this regard, but it appears that, unless expressly defined in the law applicable to the contract, there is no implied requirement for an employer not to be in breach of contract in order to exercise its right to termination under the convenience clause. Nevertheless, depending on the particular circumstances, the exercise of such a right by an employer in breach of contract may amount to that party's attempt to escape the obvious consequences of its breach.

Therefore, some limitations are set out where:

- The employer's default is a breach of the contractual obligation owed to the contractor (see *Cheall v. Association of Professional, Executive, Clerical and Computer Staff* [1983] 2 AC 180, per Lord Diplock at p. 189).
- The employer's convenience termination arises as a direct consequence of the employer's prior breach (see *Nina's Bar Bistro Pty. Ltd. v. MBE Corp. (Sydney) Pty. Ltd*. [1984] 3 NSWLR 613).

  Moreover, where these limitations do apply, the long-established legal principle that a party is not permitted to take advantage of his own wrong (see *Rede v. Farr* (1817) 6 M&S 121 per Lord Ellenborough CJ at 124, *New Zealand Shipping Co. Ltd. v. Société des Ateliers et Chantiers de France* <1919> A.C. 1 at p.8) shall be given effect as:
  - a principle of law precluding the wrongdoer from taking advantage of his own wrong, whatever the contract may say and however clearly the contract may appear to confer on the wrongdoer an unqualified right to enjoy such advantages, or
  - a presumption of construction of the contractual convenience clause (see *Peregrine Systems Ltd. v. Steria Ltd*. [2004] EWHC 275 (TCC) per HHJ Seymour Q.C. at para. 106).

The dictum in the Australian case *Emhill Pty. Ltd. v. Bonsoc Pty. Ltd.* ([2003] V.S.C. 333) appears to confirm that, unless the employer's breach is clearly independent of the grounds to terminate

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for its convenience, it would require clear words to permit such a construction of a convenience clause. Otherwise, that clause would allow employers in breach of contract to ignore and take advantage of their own default. It can be concluded that the employer's contractual power to terminate the contract, at any given time he deems such a termination to be in its best interest and without regard to employer's defaults or omissions, is likely to be subject to judicially imposed restrictions, which, depending on the law applicable to the contract, are implemented by explicitly drawing on the concept of good faith and fair dealing.

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2.11 Time-related issues

2.11.1 Delay

Delays may be caused by the employer, the contractor, the contract administrator, third parties or by reasons beyond the parties' control and they may lead to an extension of time for completion (EOT). Sometimes only some works (activities) are delayed and they do not require an extension of time for completion of the whole work. They may, however, cause a 'disruption' (see Section 2.11.2), i.e. more difficult working conditions. For details, see Chapter 7.

2.11.2 Disruption

Disruption can be defined as any change in the method of performance or planned work sequence contemplated by the contractor at the time the bid was submitted that prevents the contractor from actually performing in that manner. This material alteration results in increased difficulty and cost of performance (Cushman, 2011). Standard forms of contract and governing laws do not usually expressly deal with disruption. For details, see Chapter 7.

2.11.3 Ownership of floats

Comprehensive time schedules in large construction projects cover an enormous volume of activities that are interrelated, overlapping and running concurrently. Each of them can contain a time allowance at their beginning and/or end. In the case of delay or extension of time for completion, it often becomes difficult to determine who is the one entitled to make use of this allowance (the 'float', i.e. the time for completion of the critical path). Commonly, these significant issues are neither solved by sample contracts (including those from FIDIC) nor via the governing law. For details, see Chapter 7.

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2.11.4 Time at large and Extension of Time

'Time at large' is a common law principle, according to which the agreed time for completion (under delay damages) no longer applies if its fulfilment is prevented by the employer and when either the contract lacks any mechanism for extension of time for completion or when such a mechanism is non-functional. Under these circumstances, the contractor is excused from the duty to complete the work by the original contractual deadline, being instead obliged to do so within a reasonable period of time. The employer may not then claim delay damages.

It is without doubt that, in both legal systems, a party with a proactive approach (i.e. the one that flags events with potentially adverse impacts on quality, time, price, is timely in notifying and submitting their claims and is inclined to solve the complications in time), being in good faith, must always be protected in case of a dispute. For details, see Chapter 7.

2.11.5 Concurrent delay

The above tenet of time at large is based on the common law 'prevention principle'. In civil codes, similar provisions are regularly encountered. These provisions protect the contractor in delay who is prevented from performance by the employer in cases where the contractor was acting in good faith.

It is not uncommon for both parties to be in delay simultaneously. Frequently, the issues of concurrent delays are not covered in detail by governing law or in the contracts. For details, see Chapter 7.

2.11.6 Constructive acceleration

Constructive acceleration is encountered where there is a delay caused by the employer (after an employer risk event) and where the contractor has notified the employer of a claim for extension of time for completion. The employer may then refuse this claim, insisting via an instruction or request, that in fact no delay has occurred and the works should be finished on time. The contractor may express their disapproval and demonstrate an endeavour to accelerate. The acceleration will take place and additional costs will arise as a result of such acceleration. The particular governing law will strongly influence the success of a constructive acceleration claim. For details, see Chapter 8.

2.12 Quantification of claims

2.12.1 Headquarters overhead claims

In general, the contractor is entitled to be compensated for indirect costs in the form of increased, non-absorbed headquarters overhead expenses if, for example, the work completion date is extended on the employer's side. This is because extra payment for such a prolongation by the contractor would not have been factored into their bid price. In the Anglo-American world, various formulas are frequently used to quantify the cost because of the difficulty of exact assessment. The reason is the

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difficulty or impossibility of identifying the headquarters overhead for a particular contract in the bill of quantities as it consists of the expenses incurred by the contractor's administrative units (such as top management, office staff and services). These administrative units concurrently handle a large number of projects and the related allocation of costs can be very complicated. The governing law and the method of dispute resolution may influence the outcome in dealing with headquarters overhead claims. For details, see Chapter 10.

2.12.2 Global claims

A global claim is one in which the contractor seeks compensation for a group of employer risk events but does not or cannot demonstrate a direct link between the loss incurred and the individual employer risk events (the SCL Protocol).

Recently, some courts have been accepting global claims or modified versions of them. This is due to the complexity of activities performed on a construction site that make the process of individual claims, precise documenting and quantifying (where each cause has a distinctive effect and a distinctive loss) almost impossible (Haidar, 2011). Also in this case the governing law and the method of dispute resolution may influence the outcome in dealing with global claims. For details, see Chapter 10.

2.13 Statutory defects liability

A 'decennial liability' (*responsabilité décennale* in French) appears in some jurisdictions. Some civil codes (such as those of Kuwait, Iraq, Jordan, Egypt and Lebanon) contain such provisions, thereby expanding the contractor's liability for the defective work, particularly in structural stability (i.e. an objective liability). Reduced liability can be claimed on the basis of *force majeure*, for example and will vary from jurisdiction to jurisdiction. In other words, it is in fact a specific warranty which runs in parallel to contractual defects liability, if any. In some countries, this liability is closely related to decennial insurance and is a typical example of a mandatory provision which may have major impacts on contractual relationships in an international project (Malinvaud, 2010).

2.14 Performance responsibility: reasonable skill and care versus fitness for purpose

In construction projects, the contractors and designers are often responsible for the results of their works at a professional duty of care level (or reasonable skill and care) basis. In this case, they are not responsible for the result but only the correctness of the process leading to the result to be achieved. The governing law or contract frequently defines the details of the standard to be achieved. Where the contract and/or governing law is silent on the matter, this principle often manifests itself as an implied term.

In the case of design-build projects, for example, construction contractors and designers are typically responsible for the result of their works in more rigorous

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terms. The result must then meet the fitness-for-purpose criterion. In other words, the employer will define the dimensions and the main parameters of, for example, a power plant. The employer must specify the amounts of power to be generated in a given period of time and for what consumption of fuel (coal, gas, biomass, etc.), waste production and air pollution rates. The contractor frequently has to scrutinize an employer's requirements to remedy all discrepancies. The above-mentioned implied term is followed then.

Concerning the status of performance responsibility, the differences are also in the sample documents coming from diverse conveniences. In France, for example, the *Cahier des Clauses Administratives Générales* (CCAG) Contract forms are used. The Institution of Civil Engineers (ICE), Joint Contracts Tribunal (JCT), and the New Engineering Contract (NEC3) Sample Documents are used in the United Kingdom. The mentioned sample forms contain various significant differences but regulate the same or similar relationships. When, for example, a CCAG form is used, the designer must provide for the design and be responsible for the respective fitness for purpose. The terms will be looser where the British forms are used, as these are based on the 'professional' standard of care.

2.15 Common law, civil law and Sharia interconnections

The chosen dispute resolution procedure in a particular jurisdiction may be crucial when evaluating a specific contractual provision or circumstance in respect of the governing law in European or Anglo-American jurisdictions. Most frequently, such a dispute will be dealt with through adjudication, arbitration or litigation.

An arbitrator or judge from a common law country may hand down different decisions to their counterparts from civil law jurisdictions. An experienced common law arbitrator may accept, for example, a lapse of claim ('resting on one's rights') in whatever context. Lawyers from these jurisdictions respect, almost absolutely, the agreed wording of the contract.

In contrast, a judge from a civil law jurisdiction may refuse the validity of such a clause (or forgive the lack of notice) considering the claim in view of general principles of the governing law and arguing that if damage is caused by the employer and the employer knew about the event causing the claim (e.g. delayed access to the site), then the contractor has the right to claim damages despite the lack of notice. For this reason, civil law lawyers will refer to good manners and good faith protection when preparing their submissions.

It is further worth mentioning that particular common law jurisdictions can find themselves in conflict regarding certain matters. For example, while the doctrine of constructive acceleration is recognized by US law, it is not recognized in Ireland. The same applies to the lack of an 'exact character and composition' doctrine of *force majeure* even between US jurisdictions. Furthermore, in the United States, the employer's duty to make progress payment is a condition precedent to a contractor's obligation to continue work. In Commonwealth countries, however, progress payment is not a condition precedent (Venoit, 2009).

Despite some differences, both civil and common law systems are rather similar when compared to other legal systems. In Middle Eastern countries, for example, it

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is necessary to take into account the Sharia system of law. Currently, nearly all Arabic countries have modern civil codes based on the *Egyptian Civil Code* and Islamic law. There is no unified Arabic law, but the individual legal systems share numerous similarities. General rules of Sharia may then be used to fill gaps in jurisdictions ruled by national constitutions such as in Egypt, Syria, Kuwait, Bahrain, Qatar, the UAE, and Yemen. This can sometimes make contractual provisions void. Some void provisions may include inadequate interest rates or contractual penalties, establishing general legal principles for protection of good manners and good faith as in the civil codes in Europe. Despite their relative similarity to the civil law system, the above countries predominantly use FIDIC forms, which are based on the common law. In some of these countries, FIDIC forms were made a part of their local public procurement legislation. This situation is reflected in Europe as well.

Evidently, the legal systems are now undergoing a natural convergence (rather than any artificially planned unification) in the field of large construction projects, influenced by the sample documents (mainly the FIDIC forms) used over long periods of time in particular regions. The use of sample forms leads to a degree of convergence, which can also be attributed to other factors such as international treaties, economic and political unions, model laws, standard terms and the business practice of international lenders, insurers, investors and contractors and the lack of clear construction law principles in many jurisdictions.

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3 Common Delivery Methods

3.1 Common delivery methods: Main features

A construction project is a unique individual arrangement of processes that involves various participants with different tasks who are constrained by various factors, hazards and related risks. With that in mind, the right delivery method (form of construction project management and organization) should be selected – with the employer taking the lead role in this decision.

In general, three basic delivery methods are most frequently encountered. Their names may differ, depending on a particular author and country of use. They are most frequently called:

- *General Contracting or Design-Bid-Build* (often abbreviated as DBB). General Contracting is a traditional form of project delivery where the employer is responsible for the design that includes drawings, specifications and bill of quantities with rates and prices quoted in the contractor's bid at their risk. It is a re-measured contract with the works measured on actual need and paid on the basis of monthly instalments for works done. Contract administration is done by the engineer.
- *Design-Build* (often abbreviated as DB), including Engineer-Procure-Construct (EPC). The Design-Build delivery method is typical of contractor design responsibility with the employer's requirements specifying only the purpose, standards, scope and performance criteria for the works. It is a lump sum price contract without a bill of quantities. Payments are made in accordance with a payments schedule. With the Design-Build delivery method, the employer gains higher predictability of price and time for completion. The contractor assumes higher risk, so their bid price usually contains a risk surcharge.
- *Construction Management* (often abbreviated as CM), including CM At-Risk and Engineer-Procure-Construction Management (EPCM). The Construction

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Management delivery method assumes that the employer concludes direct contracts with particular contractors on a lump sum basis. For the sake of their coordination, a construction manager is hired by the employer on a professional service agreement basis. The construction manager is paid on a cost plus basis, so the general contractor's surcharges are restricted. The construction manager is liable for bad management, planning and coordination but not for bad performance by particular contractors.

'Multiple-Prime Contracts', Partnering and Alliancing as separate delivery methods are sometimes found as well.

It is impossible to define the best method and, as a result, hybrid arrangements often tend to appear. Obviously, the most suitable delivery method has to be formulated for every particular project. Financing conditions, employer priorities, project difficulty, the socio-political situation and many other factors are relevant variables which need to be considered.

Particular delivery methods differ mainly in respect of the following:

- design responsibility;
- contract price determination;
- contract administration approach; and
- risk allocation and admission of claims.

3.1.1 Design responsibility

In terms of design responsibility, we encounter main two options:

- The employer is responsible for preparing a detailed tender design (drawings, specifications and bill of quantities). Under such an arrangement, the participants of a particular construction project will usually have to deal with a conflict among designers because the contractor usually adjusts the tender design to suit their own implementation design.
- Contractor's 'single point responsibility' for the design and works. The employer submits requirements with minimal detail at the tender stage, stating only purpose, scope and other technical criteria (such as performance criteria) often on a fitness-for-purpose basis.

3.1.2 Contract price determination

In terms of contract price determination, there are, in general, three main payment bases:

- lump sum;
- re-measurement;
- cost plus.

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3.1.3 Contract administration

In terms of contract administration, there are three usual arrangements with the following people:

- the engineer: this is the employer's agent whose job is to monitor and supervise the work and make fair determinations on certain matters, e.g. on claims for extensions of time and additional payment. The engineer issues certificates.
- the employer's representative: the contract is administered directly by the employer or their representative. If the contractor is to achieve certainty of time and price stipulated, then the involvement of the employer must be limited to a minimum during construction.
- the construction manager: the employer's agent hired to coordinate all processes on a professional service agreement basis without direct responsibility for design and works.

3.1.4 Risk allocation and admission of claims

In general, there are three basic rules of balanced risk allocation:

1. allocate risks to the party best able to manage them;
2. allocate the risk in alignment with project goals; and
3. share risk when appropriate to accomplish the project goals.

In certain circumstances, the risk allocation does not need to be balanced but still needs to be efficient. Under such arrangements an efficient risk allocation can still exist even where the majority of risk is shifted to the contractor and almost no claims are allowed. For example, where it is possible to control the risk and where there is enough time to prepare the bid and an allowance is made for an appropriate risk surcharge in the bid price.

Inefficient risk allocation can therefore do the following:

- lead to project complications;
- have a negative influence on price, time and quality; and
- lead to speculative claims, disputes, potential contractor bankruptcy and early project termination.

3.2 General contracting

General contracting, and design-bid-build presume a higher level of employer responsibility for the design by implying that the employer will bear responsibility for its preparation and execution.

Tender documents include detailed designs which contain drawings, technical specifications and a bill of quantities. The contractor will stipulate particular rates

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and prices in its tender quotations (which become binding during realization), with the risk of errors in estimation to be borne by the contractor. The amount of work to be carried out is measured to reflect the reality necessary for proper completion of the work. It is, therefore, a type of 're-measurement contract'. The main advantage of general contracting is that it enables the use of competitive bidding to select the contractor. Many employers are pushed by public procurement law or simply prefer to select the contractor on the basis of lowest price. For this reason, general contracting is the most convenient method. This approach is traditional and well known, more user-friendly, familiar and comprehensible to the participants in international construction projects. In many countries, it is in fact the only delivery method used in public procurement projects – even in cases where different delivery methods would be much more appropriate.

The following are often taken as given in general contracting:

- The main contractor will execute a part of the contract through their own capability.
- The employer will prepare the design and be responsible for it. A substantial part of the design will have to be completed before the contractor is selected and then finalized via a detailed design.
- Standards and quantities are defined in the contract and the contractor will perform the activities as scheduled in the bill of quantities.
- An engineer will be appointed.
- An independent quantity surveyor is appointed to supervise the re-measurement of works.
- The contractor executes the work, being responsible for compliance with the standard of workmanship and abiding by the engineer's instructions. The works carried out within a particular time (usually a month or 28 days), as surveyed and approved by the engineer in the contractor's statement are invoiced.
- It is not the top priority to execute the works as quickly as possible.
- Risk allocation is balanced and respective claims admitted.

3.3 Design-build

According to the design-build (DB) delivery method, the contractor is expected to be responsible for the design, execution and sequencing of works. The amount of design works depends on a particular project. Sometimes it is also up to the contractor to obtain the building (or other) permits and include this in their package of services.

As a part of the tender documents, there are the *employer's requirements* which specify the purpose, scope, design requirements and/or additional technical criteria for the project. The employer's requirements will usually identify the parts of the works to be designed by the contractor and the criteria the design will reflect (such as the shape, dimensions, technical specifications and standards). The employer's requirements must be clear and unambiguous. The contractor will submit a proposal within their bid based on the employer's requirements.

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A bill of quantities is sometimes omitted in DB projects and there is no re-measurement of works actually carried out. As mentioned, invoicing will follow the payment schedule or can be contingent upon the completion of predefined parts of the work.

In the case of DB, price bears the characteristics of a lump sum. The bid price tends to be higher than in general contracting, as greater risk passes to the contractor. The employer, however, has an option to commence the works earlier because of the overlap of the design and construction phases. Furthermore, with DB, the probability is higher that the initial estimate of the bid price will be close to the actual final price. This is because the single point contractor's responsibility for work realization limits contractor claims. The employer also has the added advantage of making use of the contractor's expertise in design preparation. This can lead to a decrease in the total price. The contractor is responsible to produce a final work fit for required purpose. This may be based on express contractual clause or in some jurisdictions DB contracts may be subject to an implied term of fitness for purpose (for different opinions see the case Trebor Bassett Holdings Ltd v ADT Fireand Security plc [2011] EWHC 1936 (TCC); [2011] BLR 661 (CA) [2012] EWCA Civ 1158).

The following are often taken as given under DB:

- Responsibility for design rests with the contractor.
- DB is not suitable for projects where numerous variations are expected and requested by the employer during realization.
- General contracting provides employers with more control over a construction project. Employer priority may be to waive such control if they decide to implement DB.
- More certainty that the quoted bid price will reflect the completion price. The DB method is not recommended for high risk projects, as it is inefficient to allocate risks to the contractor where the contractor cannot control these risks.
- DB will allow quicker commencement of realization by making the overlap in the design and realization phases possible.
- Risk allocation is balanced, but some risks are shifted onto the contractor such as the risk of design errors and the risk of estimation errors in rates and prices in the contractor's bid. Claims are admitted but narrowed respectively.

3.3.1 Design-build procurement

The evaluation of bidders is an indisputable problem with the DB method when used in a public procurement context. The bill of quantities is most frequently priced under general contracting, with the lowest price being the only crucial criterion for succeeding in a tender ('competitive bidding'). This approach is popular because it is very easy and traditional. Also other technical parameters are used in the evaluation of tender participants using the DB method and the subjective nature of selecting individual proposals cannot be eliminated. The problem is how to ensure transparent and objective evaluation when the individual bids are matched against each other.

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Procurement of a design-build contract is often a very complex process with plenty of potential pitfalls for inexperienced or unprepared employers. The following issues may be encountered (Clark, 2013):

- Lack of appreciation of the complexities involved in procuring a DB contract. It is not possible to procure a DB contract following a 'tick-box' approach to procurement. If the employer does not have the full range of technical, commercial and legal expertise in-house, they should consider engaging a qualified consulting firm.
- An inflexible approach to procurement (i.e. use of single-stage tendering) which leads to protracted and, in some cases, distorted procurement exercises. The employer should consider the benefits of a prequalification phase, where appropriate. The employer should use an appropriate and flexible procurement strategy which provides for dialogue with tenderers prior to the submission of priced tenders. The first stage tender should be a technical proposal without price. Price evaluation is part of the second stage tender.
- The key aspects of the design should be given to the contractor. The employer should let the designer design.
- Inappropriate qualification criteria.
- Lack of understanding by foreign contractors of local design and licensing requirements which lead to delays in approval of the detailed design and contentious claims.
- Poor drafting of the employer's requirements and failure to address conflicts with national regulations through the particular conditions can lead to many problems during the procurement and contract implementation phase.
- Claims during the contract implementation phase (often as a result of an issue that could have been identified and addressed earlier in the process) which lead to cost and time overruns.
- The employer should ensure that the conditions of the contract are consistent with the applicable law and national procedures.
- The employer should avoid the temptation to introduce provisions from other contract forms (particularly those pertaining to allocation of risk, i.e. unforeseeable difficulties/costs as contained in the FIDIC EPC/1999 Silver Book).
- The employer should allow contractors a sufficient tender preparation period.
- The employer should not underestimate the importance and the role of the engineer in successful implementation.

Because the distinction between design services and construction work is not always clear on a design-build project, obtaining guarantees and insurance can sometimes be difficult. Design services are generally not bondable. Similarly, the insurance carried by most contractors excludes any liability for design work (Kelley, 2013).

3.3.2 Employer's requirements in design-build projects

In design-build projects, the 'employer's requirements' is an engineering document crucial to the success or failure of the project. Being a precise requirement for the completed works, it must cross-refer to the conditions of contract when being drafted. Therefore it is of utmost importance to maintain the consistent use of terminology (Poulsen and Záhonyi, 2013).

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The document must include all the definitions and purposes of the work, a definition of the site, a definition of interfaces between disciplines and other contracts, quality and performance criteria (including testing) and special obligations such as training, spare parts and warranties.

The quality and performance specification should be prepared only to the extent necessary. Detailed specifications may lead to a reduction of contractor design responsibility. Furthermore, the specifications must be precise to enable enforceability and cannot be subjective (e.g. specified 'according to the opinion of the engineer').

The employer's requirements should contain only a reference (illustrative) design with simple drawings and schematics as appropriate to the discipline. This must be done with caution to ensure that design responsibility is not transferred back from the contractor to the employer. Such a conceptual design is part of the employer's requirements to the extent necessary to define the works (e.g. 10% of total design input). In the instructions to tenderers, the requirements for a preliminary design (that will be a part of the contractor's proposal) are described. The final design is then part of the contractor's realization documents (Poulsen and Záhonyi, 2013).

In terms of accuracy, sufficiency and completeness of Employer's Requirements (as established by FIDIC forms), there are substantial differences between the particular 1999 forms (mainly the P&DB/Yellow Book and EPC/Silver Book).

In FIDIC P&DB/1999 Yellow Book (and DBO) the employer is responsible for the correctness of the employer's requirements. The employer's responsibility related to Employer's Requirements is subject to a 3-tier procedure (Poulsen, Záhonyi, 2013):

1. Clarification questions (Tender/Pre Contract Phase):
   The procedural aspect of tender clarification depends mainly on the particular governing law and the procurement rules that were used.
2. Under the Sub-Clause 5.1 (General Design Obligations):
   Upon receiving notice of the commencement of works, the contractor shall scrutinise the employer's requirements (including design criteria and calculations, if any) and the items of reference mentioned for the purpose of setting out the works. Within the period stated in the appendix to tender, (calculated from the commencement date), the contractor shall give notice to the engineer of any error, fault or other defect found in the employer's requirements or items of reference.
   After receiving this notice, the engineer shall determine whether a variation procedure shall be applied, and shall give notice to the contractor accordingly. If and to the extent that (taking account of cost and time) an experienced contractor exercising due care would have discovered the error, fault or other defect when examining the site and the Employer's Requirements before submitting the tender, the time for completion shall not be extended and the contract price shall not be adjusted.
3. Under the Sub-Clause 1.9 (Errors in the Employer's Requirements):

   > If the contractor suffers delay and/or incurs cost as a result of an error in the employer's requirements, and an experienced contractor exercising due care would not have discovered the error when scrutinising the employer's requirements, the contractor shall give notice to the engineer and shall be entitled subject to (a) an extension of time

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> for any such delay, if completion is or will be delayed and (b) payment of any such cost plus reasonable profit, which shall be included in the contract price.

In FIDIC EPC/1999 Silver Book it is the contractor who bears responsibility for any errors, inaccuracies or omissions in the Employer's Requirements.

1. Under the Sub-Clause 5.1 (General Design Obligations):

> The contractor shall be deemed to have scrutinised, prior to the base date, the employer's requirements (including design criteria and calculations, if any). The contractor shall be responsible for the design of the works and for the accuracy of such employer's requirements (including design criteria and calculations), except as stated below.
>
> The employer shall not be responsible for any error, inaccuracy or omission of any kind in the employer's requirements as originally included in the contract and shall not be deemed to have given any representation of accuracy or completeness of any data or information, except as stated below. Any data or information received by the contractor, from the employer or otherwise, shall not relieve the contractor from his responsibility for the design and execution of the works. However, the employer shall be responsible for the correctness of the following portions of the employer's requirements and of the following data and information provided by (or on behalf of) the employer:
>
> (a) portions, data and information which are stated in the contract as being immutable or the responsibility of the employer,
> (b) definitions of intended purposes of the works or any parts thereof,
> (c) criteria for the testing and performance of the completed works, and
> (d) portions, data and information which cannot be verified by the contractor, except as otherwise stated in the contract.

The specifics of EPC and EPCM are discussed in Chapter 4.

3.4 Construction management

Under construction management (CM), an employer has direct contracts with the individual prime contractors and hires a construction manager as their consultant for the purpose of coordination. The manager is paid on a cost-plus basis (i.e. a surcharge to the direct costs of the individual prime contractors' prices).

CM (sometimes called pure CM or agency CM) originated in the USA. CM was developed in the 1960s and early 1970s because of the need to realize complicated construction projects in a short time while meeting top standard requirements. This necessity led to the creation of a system within which the effectiveness of a construction manager's competencies is crucial. Among the construction project participants, priority position is therefore given to the employer's representative in the form of the 'construction manager' in charge of management and coordination.

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A further purpose of CM is to limit the main contractor's surcharges which burden the employer in general contracting. Payments to contractors are direct and without any intermediary. Individual contractors (including a designer or DB contractor) perform particular parts of the works on a lump sum contract basis. CM is typically used in building construction in projects with numerous subcontracts that have to be effectively coordinated.

The construction manager is not responsible for subcontractor performance but is responsible for negligent acts of management, for example, lack of skill and adequacy of management leading to maladministration, bad coordination and poor planning.

Performance risks – particularly the responsibility for on-time completion – rest with the contractor. Performance guarantees are required by the employer and include, for example, bank guarantees to ensure on-time project realization and remedying of any defects within the defects notification period. Even one problematic subcontractor may cause substantial damage and delay to the entire construction project.

The following are often taken as expected norms under CM:

- The CM concept assumes and expects the employer (often being a developer) to take an active role, have extensive experience and to cooperate closely with the construction manager. Ideally, the construction manager and the employer should know each other and have worked together on a long-term basis. For this reason, CM is often unsuitable for public contracts.
- Timely completion is often an employer's top priority. Using CM allows for faster decision-making and can result in reduced cost. Similarly, the employer's expectation when using CM are quick start-ups and financial returns.
- From the employer's point of view, the priority is not lowest construction cost but 'value for money'. In other words, return on investment.
- The construction manager is paid on a cost plus basis. Total construction costs are difficult to foresee due to the fact that no one contractor guarantees overall price.
- Risk allocation, design responsibility, price determination and claims admission depend on the contracts between the employer and particular prime contractors that are liable for bad performance. The construction manager is only liable for bad management, planning and coordination.

3.4.1 CM-at-risk

CM-at-risk is a delivery method derived from CM where the construction manager is responsible for delivering the project within the limits of the *guaranteed maximum price* (GMP).

The construction manager not only acts on the employer's behalf during the preparations and pre-award engineering, but also acts as a *de facto* main contractor in the construction phase. The CM undergoes a fundamental change with the manager being obliged to adhere to the GMP. To avoid exceeding the GMP, it is in the manager's own best interest to manage and control construction costs.

Such a system, however, must be perfectly devised in terms of risk allocation, insurance, securities and contingencies. Reserves must be properly established by

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the employer and construction manager. Such a set-up is not appropriate for projects posing numerous pending hazards with major risks.

3.5 Multiple-prime contracts

Under the multiple-prime contracts delivery method, a large number of main contractors work under the employer or under an employer's representative on the basis of separate contracts. The employer will have under their direct control the particular prime contractors, thereby avoiding the main contractor's surcharges. However, the employer will assume the duties of coordination and surveillance which bring with them significant risk. Many American states (Pennsylvania, Ohio, New York, New Jersey, and North Carolina) have amended their public procurement legislation to include the mandatory use of this delivery method (Cushman, 2011). The employer must not assign the duty of coordination and management in such cases. Where the duty to use the multiple-prime contracts delivery method is not imposed by law, the duty of coordination and management is most frequently delegated to one of the main contractors. The position of a coordinating contractor will then arise and does not differ from a traditional general contractor. In such cases, the particular rights and obligations must be defined in the contract, for example, the coordination and management duty and the way to execute the defined duties during realization.

3.6 Partnering

Partnering is not a clearly defined concept in construction. It is not a delivery method but rather a commitment of construction project participants to work together cooperatively, rather than competitively and adversarially. Partnering is a pre-realization measure that has an indirect, positive influence on project realization. Partnering is, more or less, the formal attempt of all participants to implement and use a common forum. This creates opportunities for regular, open communication between the parties and joint solutions to problems.

Partnering originated in the USA, though most of the processes adopted in partnering come from the Japanese construction industry. These are, in turn, the application of total quality management and lean manufacturing concepts from manufacturing industries.

An initiation meeting where the individual representatives (such as the employer, contractor, designer and/or the contract administrator and important subcontractors) get acquainted is held right upon commencement of the project. To facilitate this meeting, an independent consultant can take part in the agenda and may include discussions and/or presentations that will clarify the steps to realization and the parties' obligations. The main purpose of partnering, therefore, is to strengthen the participants' commitment to strive for open and well-informed solutions to problems.

Partnering is a method which allows participants to minimize or avoid conflicts when they are engaged in a complex project. It is a way of unifying all parties as stakeholders to a project into a team. Experienced contract administrators use this

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process as a polite and routine form of mutual communication throughout construction project realization.

Partnering is in fact a code of conduct, a working agreement intended to create a non-adversarial culture and to promote a 'win-win' relationship between the parties. The disadvantage of partnering is that it is based on a 'gentleman's agreement'. Despite being well intentioned, if a conflict arises, the parties almost always revert back to formal contractual procedures.

3.7 Alliancing

In contrast to partnering, alliancing involves a formal contract under which the parties undertake to act in the best interests of the project. It seems that alliancing has been accepted as a specific delivery method but its use in international construction projects is not significant. When alliancing, the parties commit to work cooperatively and to share risk and reward, measured against performance indicators.

The birth of the alliancing concept, notably 'Project Alliancing', originated in the UK where British Petroleum (BP) developed a new 'painshare–gainshare' compensation programme called Project Alliancing for the North Sea Andrew's Field Project. The alliance was established in the early 1990s and resulted in a reduction of capital costs by 21% and the production of oil six months earlier than originally scheduled. The emergence of alliancing received a great deal of attention from industry practitioners and researchers – particularly in the Australian construction industry (Rowlinson and Cheung, 2013).

The allied participants of a particular construction project work as a single integrated team and their commercial interests are aligned with actual project objectives. They are selected on capability approaches and systems and other soft criteria such as enthusiasm, commitment and chemistry. A commercial framework is created that drives 'best for project' decisions which share the rewards of outstanding performance and the pain of poor performance. All risks are shared by all members of the alliance.

Alliancing is a valid option for the delivery of projects which have a relatively high level of uncertainty in their project definition, are complex in form or have very tight delivery timetables. Where it is difficult to allocate risks sensibly or where there are complex issues which are difficult to manage, alliance arrangements between competent parties have much to offer. When successfully implemented, the integrated project team focuses on project delivery and high performance, rather than their potential exposure and liability under contract. Typically having an 'open book' price determination, (i.e. guaranteeing payment for all project costs), alliancing provides little incentive for keeping costs under control – particularly when relatively modest contractor margins are at stake.

During realization, alliance partners must share resources including professional expertise. To ensure success, this must be facilitated through a continuous flow of information and communication. In alliancing, 'No Dispute' clauses are sometimes used. Under such clauses, the parties agree to waive rights of action against each other in arbitration and litigation.

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3.8 Extended delivery methods (PPP, BOT, DBO)

The public and private partnership (PPP) method was developed to enable and make optimal use of private funding and expertise for public projects. In practice, it usually applies to a public investment or service performed, operated or provided directly by the private sector (a company other than one owned by the state or an association (consortium) of companies) instead of the public sector (such as the state, regional or local municipality). After an agreed operation and maintenance period, the work will pass into public ownership. In PPP projects, the public sector will then act as a manager and supervisor over the private contractors.

In the past few years, public employers have chosen this approach as it does not burden the budget or increase public debt directly. The long-term effects are hard to foresee, however. The main advantage is the opportunity to start new projects that could not have been financed without private resources. The negative aspects are higher overall transaction costs and loss of employer control.

PPP is, in practice, more of a brand name for different kinds of projects known as DBO, BOT and so on. The exact meaning of these brands must be examined according to a particular project. The following abbreviations and their respective combinations express the delivery method most often encountered:

D – Design
B – Bid
B – Build
O – Operate
M – Maintain
O – Own
T – Transfer
F – Finance.

3.9 Further aspects of delivery methods

3.9.1 Fast track projects

A construction project management system known as 'fast track' is focused on cutting the duration of a construction project as much as possible. Its characteristics can be described as follows:

- Mutually independent processes run concurrently.
- Design work runs almost simultaneously with realization, being only a short time ahead of it.
- Many of the designer's decisions take place on site.

Fast track contracts lead to price uncertainty. Shorter time for completion is balanced against uncertainty and higher costs.

3.9.2 Target cost contracts

One of the challenges of every project is achieving an environment where both parties collaborate together and have a common commercial interest. It is therefore

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necessary to design contractual mechanisms which provide a commercial incentive for the parties to communicate and collaborate to ensure that the project is a success.

One such mechanism is a 'target cost contract'. As part of the contractual negotiations, the parties agree on a target price based on their knowledge of the project conditions and their assessment of potential risks. The works then begin and during the works two things occur in parallel:

1. The contractor is generally paid their actual costs (less disallowed costs) plus a fee on a regular basis (usually every four weeks).
2. The initial target price is adjusted during the works in accordance with compensation events and their estimated cost.

On completion, these two elements are compared. If there is a saving or a cost overrun, then the parties share such savings or cost increases in the agreed proportions set out in the contract.

One of the ways of ensuring that the correct target is fixed is by engaging in early contractor involvement and, where appropriate, pre-construction services agreements.

3.9.3 Early contractor involvement and the pre-construction services agreement

A common reason for problems is that a contractor is often introduced to the project just before the work starts. Contractors typically have no involvement in the design phase and have no opportunity to contribute their expertise and insights to the design. In addition, the contractor's lack of familiarity with the project often leads to cost increases due to greater risk allowances. To avoid such issues, the practice of early contractor involvement has developed in the UK.

The basis for early contractor involvement relies on parties entering into a pre-construction services agreement (PCSA). Under such an agreement, the contractor is paid by the employer to develop the initial design. Once this has been done, the employer has the choice of either continuing with the same contractor and entering into a full construction contract or tendering the works again on the basis of the design produced by the first contractor.

This therefore allows the employer to benefit from the contractor's expertise and allows the contractor to familiarize themselves with the project. The contractor can then confidently offer a lower price by reducing the allowance for risks. The PCSA further allows the employer and the contractor to develop and improve their relationship and cooperation.

The UK government has identified a good example of this process in the contract negotiations for Bank Station in London, a part of the Crossrail project. In this project, the employer pre-qualified contactors who demonstrated an ability to innovate. The employer then undertook detailed, confidential discussions with three contractors in order to identify ways in which the works could be improved. Although only one contractor could win the tender, the contractors that were not successful in the bid were compensated for their time and would be paid if any of the methods they suggested were used by the employer.

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3.9.4 Building information management systems

The use of building information management systems (BIMS) is becoming increasingly popular. Waste construction projects, for example, can take advantage of their efficiencies through the use of sophisticated computer systems. In simple terms, BIMS are processes that use software to create a model of a completed project. The processes seek to enhance the design, construction and post-occupancy of a building, road, bridge or other structure. It does so by enabling the information to be used in a much more intelligent way than is the norm in the construction industry.

BIMS have been used for many years and are perhaps most established in the USA. Advanced computer modelling (e.g. 3D and CAD) have been used extensively in steel fabrication. For other designs, computer modelling has been deployed more discreetly with the traditional 'siloed' method remaining popular. For BIMS to achieve their full potential requires an integrated and collaborative approach to construction so that many discipline-specific models can be integrated with one another to simulate a fully working building. In doing so, changes to one part of the model allow other parts of the model to alter.

BIMS also bring one-time information input and its transfer across the construction life-cycle closer to reality. The end result of BIMS can be enhanced predictability in construction. For example, depending on the functionality of the software, the 'build twice, once virtually' philosophy of modelling can achieve reduced risk on construction sites by identifying health and safety issues in a virtual environment. Designs can be improved by eliminating design clashes virtually. Applications can be further developed to improve cost and programming predictability. At completion, asset information can be handed over to the owners in a way that enables its use to achieve greater accuracy in thermal efficiency projections and asset life-cycle replacement.

At the heart of BIMS are designs through the use of 'objects'. These are separate representations of parts of a building (e.g. a door, window or wall) which are selected by designers from pre-developed object libraries. The fundamental design, therefore, does not involve drawing lines but arranging objects. Objects are advanced digital creations, each having a 'parametric' relationship with other objects in the same family of compatible software. This allows changes to one object to be reflected in changes in related objects, for example, changing the size of a door may alter the size of a wall.

For these reasons, BIMS require a different way of thinking. It requires a move away from the traditional workflow, with all parties (including designers, surveyors, employers and contractors) sharing, and effectively working on, a common information pool so that each can create models that are compatible. This is a substantial move away from more traditional conventions where the parties often work on separate information pools using several different (and usually incompatible) software packages or working methods. Recently, the Construction Industry Council published a protocol for the use of BIMS, which provide a best practice guide and an outline scope of services for the role of information management. The British Standards Institution published an updated technical standard (PAS1192:2), which covers collaborative production of construction information.

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BIMS are a particularly attractive proposition for the public sector in tough economic times. They promise greater whole-life asset efficiency as well as construction stage savings. BIMS are currently being promoted by the UK government for all centrally procured construction. It is part of the UK government's drive to achieve 20% savings in its built asset budget by 2015.

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4 Specifics of EPC and EPCM

4.1 EPC and EPCM

At present, the engineer procure construct (EPC) delivery method is used as a brand name for certain types of design-build (DB) projects and contractors. The abbreviation is used mainly to label a specific risk allocation. In EPC projects, the contractor is responsible for engineering including design (the engineer duty), organising procurement of works, plants, materials and services (the procurement duties) and executes the construction works (the construct duty). Compared to the standard delivery methods described in Chapter 3, EPC contracts exhibit some differences. Therefore, EPC deserves separate consideration and discussion.

The EPC delivery method was very popular in the construction industry because it allowed greater prediction of overall price and time for completion. The resulting popularity led to a growing demand for sample contract forms based on the EPC method. This encouraged organizations such as FIDIC to produce separate sample forms (FIDIC EPC/1999 Silver Book). Organizations such as Orgalime, the AIA, the ICC, the ENAA, the ICE (see Chapter 13) and others also issued their own sample contract forms in support of the EPC delivery methods.

An alternative to EPC is the engineer procure construction management (EPCM) delivery method. This approach can be found mainly in the mining, petrochemical and power engineering sectors. EPCM appears similar to EPC in name, but in fact is different in many other aspects.

In EPC and EPCM projects, the plant contractor is in possession of the know-how and copyrights to manufacturing processes. Therefore, they are a key element of the contracting chain. This contractor is usually the lead participant in the contractors' joint venture or a representative of the main EPC contractor.

4.2 Engineer procure construct (EPC)

EPC projects come under the umbrella of the DB delivery method. EPC projects are characterized by the fact that they allocate the lion's share of risk to the contractor.

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The expectation then is that the contractor will be able to control and assess risks in their bid price. This is especially so in construction projects for power plants, steel mills, factories and manufacturing plants in the petrochemical and mining industry and in the field of environmental and water treatment projects. In these projects, in general, plant delivery prevails over construction works to be contracted. The significance attributed to plant delivery and uniqueness of product will no doubt affect the contractor's negotiating position. For example, when a nuclear power plant is to be constructed, delivery may account for 70–80% of the contract price with the plant contractor being a key player.

Typically in EPC projects, the contractor is responsible for whole project realization and for fitness for purpose of the result. The contractor is obliged to scrutinize the employer's tender documents, including specifications, geological surveys and design documents (if any). Barring exceptions, responsibility for related errors lie with the contractor. The contractor, for example, is usually obliged to verify the physical environment on site and bears the responsibility for complications caused by geological and hydrological conditions. The contractor only has limited options to claim for additional payments. Naturally, this approach can efficiently be used only in specific construction projects – particularly where there is enough time to scrutinize the employer's requirements, verify site conditions and where there are only limited risks foreseen. The contractor must assess the risks and include a risk surcharge in their bid price and the employer must expect this.

In EPC projects, the contractor has to deliver work fit for the intended purpose. Because of the lump sum price model, it is in the contractor's own economic interest to deliver at the lowest possible cost. Most probably the contractor will select and implement cost reduction methods and technical solutions within realization. For this reason, an EPC employer will have to survey the work in progress and verify work performance through frequent testing. Tests in EPC projects are typically divided into three phases: individual, complex (on completion), and warranty tests (after completion). In their tender requirements, some of the employers extend the contractor's obligations to include operation and maintenance of the work for a certain time after completion. This motivates the contractor to deliver the work at the lowest operating cost and at the highest possible quality.

A DB contractor is responsible for ensuring that the completed work is fit for purpose. EPC contractors and designers are therefore responsible for the results of their work in the same way. In accordance with the employer's tender requirements, the employer will define the scope and key criteria. In the case of a thermal power plant, for instance, the employer would typically specify the amount of power to be generated over a given period of time, for what consumption of fuel (coal, gas, biomass), and the waste production and the air pollution limits. If an employer fails to include a vital item in their tender requirements, the EPC contractor must remedy such shortcomings in their bid in order to complete the predefined purpose of the work.

It is extremely important for an EPC employer to prepare their tender requirements as accurately as possible. In particular, the project must be feasible and the performance criteria achievable. These performance and functional criteria may also be simply defined as 'categories' with particular values to be filled out by the contractor in its bid. These values often become subject to evaluation along with the price

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and other criteria quoted in the contractor's bid. It is vital for the contractor to have enough time to prepare the bid and to scrutinize the employer's requirements.

The specifics of EPC risk allocation are further confirmed, for example, in the following ICC case no. 12090 (2004) (ICC, 2012). In this case, an employer (a company) entered into an EPC contract under English common law with the contractor (also a company) for the supply, installation and commissioning of 80 wind turbine generators for a wind farm project. Within five years of installation, most of the wind turbine generators had ceased functioning due to high wind turbulence and a high rate of grid failures at the site (despite being designed to have a 20-year useful life). A damages claim followed. The contractor argued that based on its past dealings with the employer, it was only responsible for supplying standard turbines and that it was not responsible for investigating wind conditions at the site. The tribunal found that, according to the EPC contract, the contractor was responsible for supplying site-appropriate turbines as the contract referred specifically to the particular conditions at the site, including wind data in several places. The tribunal found that it was up to the contractor to design and supply the wind turbine generators that would suit the site and it was also up to the contractor to ensure that it had all the relevant data about the site (and to make appropriate use of the data), in order to ensure that the wind turbine generators supplied would fulfil the requirements of the contract. This applies to the wind conditions, the characteristics of the terrain, the electrical grid characteristics and everything else about the site that any wind turbine generators designer would need to take into account. The contractor sought to avoid liability for the failure of its wind turbine generators by further referring to an expert report that claimed the effect of high wind turbulence and the high rate of grid failures at the site were so extraordinary that the contractor could not have been expected to have provided for them. However, the sole arbitrator decided that the allocation of responsibility provided by the EPC contract prevailed over these conditions.

4.2.1 Main advantages and disadvantages of EPC

The following are often recognized as advantages of the EPC delivery method:

- single point contractor's responsibility for construction works and design;
- lump sum (foreseeable) price;
- simpler budget policy from the lender's perspective;
- faster project implementation and foreseeable completion date;
- enforcement of performance liabilities can be narrowed to one particular entity;
- contractor efficiency in searching for cheaper and quicker solutions.

The following are often recognized as disadvantages of the EPC delivery method:

- Limited employer control over the design in progress and over project realization. In conventional DB projects, the engineer – who is often also a designer as the author of the basic tender design documents – is in control of design development. However, there is usually no engineer in an EPC project and the competence of the employer's representative and their capacity to supervise design and project realization depend on their abilities in these fields.

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- The final contract price tends to be higher than in a conventional DB or where General Contracting is used, mainly due to (1) higher bid preparation costs; and (2) delegation of more risk to the contractor. This in turn may lead to contractor profit when the risks are not realized. The level of competition and the particular phase of the economic cycle can impact on the contractor's prices and risk surcharges.

4.2.2 Key issues with the EPC delivery method

The key issues that must be dealt with whenever an EPC contract is being prepared are as follows:

- definition of the scope of works, its performance and other technical criteria;
- a contract administration approach;
- allowance for claims for additional payments or extension of time for completion;
- risk allocation (mainly the responsibility for errors in the employer's requirements, errors in setting-out, errors in the employer's design, risk allocation of unforeseeable difficulties, exceptional events or *force majeure*);
- responsibility for obtaining the respective permits and licences;
- variation procedures;
- tests and taking-over procedures;
- performance and other guarantees provided by the contractor;
- defect notification and operation period;
- training of employer's employees;
- responsibility for delivery of spare parts and other necessary service materials;
- intellectual property rights and their protection, licences and know-how for plants;
- insurance and securities. See Loots and Henchie (2013) for more details.

4.3 Bespoke EPC contracts

Contractual relationships in EPC often take the form of a 'bespoke contract'. EPC employers, engaged in the fields of power engineering or manufacturing plants, often have their own employees to take care of procurement and management. These employers are usually well experienced in project management within their field, being competent to manage and efficiently cooperate with the contractors.

Take a worldwide active steel manufacturer as an example of such an experienced EPC employer. Every steel mill is a complex system of technologically diverse, but separable and independent assemblies. Such steel mills often have their own coke-oven batteries, blast furnaces and/or electric furnaces and related power plants to power them. Closely related to such a steel mill tend to be manufacturing plants such as a rolling mill or a forge. Possible combinations of various independent technological units are numerous there. In the overwhelming majority of cases, such a business entity will have these technological units built by independent manufacturers within EPC projects for both greenfield constructions and reconstructions or extensions of existing manufacturing capacities.

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Sometimes it can be the case, however, that an experienced EPC employer will naturally maintain, on a long-term basis, its own capacities for the procurement and management of the EPC contractors. This can lead to a partial cost saving on activities that need not necessarily be undertaken by the contractor because the employer will retain these activities. At the same time, an experienced employer's team will manage and supervise project costs so that they are incurred in a reasonable way. Last, but not least, the employer's EPC team must coordinate the technological compatibility of independently built (or existing) plants by formulating specifications and supervising the work while it is being carried out.

4.4 Turnkey EPC contracts

EPC projects are sometimes called 'turnkey projects'. There is typically minimal employer intervention during realization and they assume take-over of a fully functional work that is fit for purpose. Even though the 'turnkey projects' brand has many diverse uses and an unclear meaning, the approach is appreciated and used by employers in need of implementing a one-off or very specific EPC project. Turnkey projects are preferred where the employers lack the necessary experience or where such projects include extensive plant delivery or risks that cannot be assumed by the employer – particularly where the objective is to allocate maximum risk to the contractor. The FIDIC EPC sample form (the Silver Book) is a template for use intended for such employers.

Imagine, for example, an investor, a member of a traditional and large business holding in a developing country engaged in a variety of activities, ranging from industrial production to import and representing foreign contractors. In response to the newly liberalized local power market, this investor decides to extend their business activities in an attempt to penetrate the power market as well. This is why they, as one of the first applicants, have obtained the necessary energy producer's licence issued by the government of this country. However, due to a shortage of power plants and a growing need for energy by the country's rapidly growing economy, the licence is of limited duration. Due to this time limitation, the government motivates the investor to commence construction of a power-generating unit as quickly as possible. The investor must therefore commence construction without any undue delay, as they face the further risk of potentially losing the licence. Such a situation will hardly allow the investor to develop their capabilities and capacities within a reasonable timeframe. Therefore, they have to engage an experienced contractor with expertise in power engineering – someone who is able to supply such a new turnkey power-generating unit quickly and without undue delay. An EPC contract for a power-generating unit construction project will be the best option for this investor.

Take another example of an experienced local investor with long-term involvement in running power plants, including construction and overhaul. This investor decides to include a new nuclear power plant in their portfolio, following a long-term strategy of product diversification. More than 70% of such nuclear power plant construction rests with the technologies to be delivered. Despite the investor's extensive experience, the key role will belong to the contractor who will deliver the parts not available and known to the investor. The investor has neither the necessary know-how, nor the resources to allow them to complete the construction on their

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own. In such a case it will be advantageous for the investor to procure the nuclear power plant construction project as an EPC with a contractor or perhaps even with a joint venture of other contractors. The contractors will design, construct and put into operation a fit-for-purpose product and provide the necessary training of the investor's personnel for safe operation of the plant.

Water treatment, wind farm and road construction projects in Asian and African countries by Stéphane Giraud (France)

I have participated directly in several construction projects in Asian and African countries, mainly in the position of project manager/project director and contract administrator (the engineer under FIDIC). Several lessons were learned in completing these projects and I make some useful recommendations with respect to each project.

The first project following the 1999 FIDIC Silver Book was to rehabilitate three wastewater treatment plants and to build a new wastewater treatment plant in an Asian country. The project was funded both by a multilateral bank and a local bank amounting to €50 million over the duration of 30 months.

The contractor was initially very reluctant to follow the Silver Book and required some adjustments in risk allocation. However, the project was completed on time and within the timescale.

Furthermore, the use of the contract administrator (the engineer, included as per the 1999 Yellow Book in place of the employer's representative) was advantageous, as the employer did not have the proper team/capacity to manage such an international project.

During the course of the project, two main disputes could have been successfully solved by a DAB (including a claim for a new pumping station caused by a level error in the initial setting-out) but the DAB was not used.

In general, it is recommended to amend the Silver Book (or directly use the Yellow Book) to balance some responsibilities (mainly the onerous Sub-Clauses 4.10 and 4.12) and incorporate an engineer sub-clause similar to that in the Yellow Book (in Chapter 3), especially for the construction of wastewater treatment plants in a developing country. An ad hoc DAB (or better a 'full term DAB' in major projects) is recommended to avoid loss of time and money as a sound disputes resolution' process.

The second project was to build a wind farm (250 MW) in an East African country. It was funded both by a multilateral bank and a local bank, amounting to €350 million over a duration of 36 months, also on the basis of the 1999 FIDIC Silver Book. The site was in a remote place, with access difficulties and at high altitude.

No major amendments were made during the contract negotiations (via the particular conditions) as both parties (the contractor and the employer) signed the contract without having a substantive knowledge or experience with the FIDIC forms.

The two first contractor claims were caused by errors in the site data (including errors in setting-out) and lack of access to the site. The employer relied on a weak feasibility study at the tender stage. Those studies did not deal with two major issues: the local farmers and the actual site conditions. It is recommended that employers appoint high-level professional consultancy services in such circumstances (for both local and contractual issues), before launching the tender.

The parties signed the contract without a good knowledge of the FIDIC provisions and mechanisms. They did not read and apply the contract at site, preferring to apply their own knowledge

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based on their previous experience. My recommendation is that all participants must read and abide by the contract during realization (not only once at the beginning of the project) and should participate in a kick-off meeting which includes a 'training' course on FIDIC principles.

The third project was to reconstruct an old, major road (120 km) in an East African country. It was funded both by a multilateral bank (80%) and local funding (20%) amounting to €48 million over a 24-month duration. The general conditions used were the 2005 FIDIC Multilateral Development Bank Red Book.

During the course of the project, a lot of issues that could have been dealt with by a DAB never were. This is because both parties considered it too expensive – particularly since no allowance was made for it in the original budget. In some developing countries, it seems that an ad hoc DAB (less expensive) or other dispute board (or DRB) should be recommended. It is recommended that lenders insert a DAB provision in the project budget forecast to avoid missing the opportunity to use a DAB.

The lack of FIDIC experience created a common misunderstanding about the defects notification period (DNP) mechanism shared by all parties, including the engineer. At the end of the DNP, it was believed that the performance certificate would be automatically issued even if the defects had not all been remedied. Practical training on FIDIC mechanisms would have been of great benefit to project management (and, for that matter, to all the other parties including the engineer).

In conclusion, I take this opportunity to point out some final recommendations. In particular, I would stress that:

- The engineer should be involved even where the Silver Book has been used (via an amendment in particular conditions).
- All parties must read and understand the contract. A 'kick-off meeting' should be organized for all parties together to make everybody acquainted with FIDIC principles.
- A provision for DAB or DRB should be made in the initial budget prepared by the lender/employer and with a further provision that a DAB be funded by multilateral banks.

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4.5 Front end engineering design

Normally, an EPC employer prepares the initial design for the purpose of awarding the contract on a Front End Engineering Design (FEED) basis. With the employer's requirements to hand, the contractor will provide the detailed design and be supervised by a representative hired by the employer.

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When formulating their requirements, the employer will further, as a rule, elaborate on a preliminary time schedule, contract price estimation and obtain some of the necessary permits from the public authorities. The amount of detail of the employer's tender documentation will depend on the particular project, the specific branch of industry, the country, the location of project implementation, etc.

Within the limits of this preliminary phase – but preceding the commencement of the contractor selection stage – the employer must make a choice between EPC and EPCM for project implementation.

EPC projects often involve more plants to be delivered than the volume of pure construction activities. Therefore, EPC contractors often do not have the manufacturing capacity to construct the buildings or civil engineering works, despite having their own designers. For construction activities, EPC contractors usually hire subcontractors or enter into joint venture contracts with specialized contractors in possession of the manufacturing and assembling capacities at the construction stage of the contract. The same will apply when the role of EPC contractor is filled by a foreign technology provider with inadequate knowledge of local conditions. In such situations, the local partner is able to counter-balance such an inconsistency by being invited to become a member of a joint venture or to act as the main subcontractor. Key competencies of EPC contractors often comprise not only plant delivery, but also design and related engineering activities, procurement and management of the realization itself.

The term 'engineering' means, in practice, providing pre-design activities which include obtaining the necessary permits from the public authorities if the employer has not already done so. In general, it further means that the concept of 'engineering' has to be understood as set out in its contractual definition and depends on particular clauses, governing law and customs.

Key issues in the procurement of international hydropower construction contracts by Alex Blomfield (UK)

Compared to thermal power projects, hydropower projects generally involve longer periods of construction, higher construction risk and higher construction costs. Successfully reflecting these well-known characteristics of hydropower projects in construction contracts in a manner tailored to the unique nature of each hydropower project is not an easy task. It requires a careful and balanced approach that does not try to win every point in a negotiation but instead recognizes that a robust and workable contract will have a higher chance of delivering a project on time, on budget and to specification if it provides not only firm incentives and disincentives but also the necessary flexibility to accommodate the complexity and unpredictability of hydropower construction. Based on extensive experience acting as legal counsel to project sponsors and employers on hydropower construction projects in more than 12 countries across Africa, Latin America, Europe and Asia, generally financed on a limited-recourse basis, this vignette will identify a number of trends in international hydropower construction contracts.

Employers and contractors generally choose FIDIC contracts as the standard construction contract for international hydropower projects. FIDIC contracts can save time and minimize

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transaction costs due to the fact that they are internationally known and recognized. FIDIC contracts also generally adopt a fair and balanced risk allocation and have a tried and tested track record. However, FIDIC contracts require extensive modification to work in a hydropower context, to reflect the unique site-specific characteristics of each particular hydropower project and to meet the requirements of limited-recourse debt financing. Given the large number of changes to FIDIC's general conditions that are necessary, one can discern a clear trend among employers, and increasing acceptance among contractors, towards consolidation of the FIDIC general conditions and particular conditions into one conditions of contract document in order to avoid lengthy and highly complex Particular Conditions and facilitate easier contract administration. This approach requires a licence from FIDIC, which FIDIC generally grants on a project-specific basis.

International hydropower projects tend to use one of two key construction contract procurement approaches: (1) the engineering, procurement and construction contract (the EPC contract) approach, in which the contractor engineers, constructs and procures equipment/materials on a lump-sum, fixed-price basis; or (2) the split-contract approach, in which the employer enters into separate contracts with different consultants and contractors to perform different scopes of work, such as civil works, electro-mechanical works, hydraulic steelworks, design and contract administration. The approach an employer chooses should take into account not only the characteristics of the particular project but also the level of sophistication of the employer/sponsors and likely contractor(s)/consultant(s) in hydropower project execution.

The EPC approach offers the following advantages to an employer: a single point of responsibility, maximum allocation of construction risk to the contractor, a full wrap guarantee on all aspects of project, maximum budget control, comparatively low transaction costs and minimum owner oversight. However, such advantages come with an expensive risk premium, which may even offer poor value to an employer if the contractor has not been able during the bidding process to properly price its risk due to inadequate opportunity to conduct due diligence, in particular, for tunnelling and other projects particularly prone to unforeseen geological conditions. Furthermore, sophisticated hydropower sponsors will see it as a disadvantage that the EPC approach allows only limited sponsor involvement in the design phase and construction process. In addition, a limited (or sometimes even non-existent) EPC contractor market can often inhibit use of the EPC approach.

While lenders generally prefer fixed-price, single-package EPC contract models, the project finance market has more recently started to accept a split-contract model with between two and four main packages so long as the sponsors provide some level of completion-related support to mitigate the interface risks between the various construction packages. To the extent that a project encounters cost overruns or schedule delays that jeopardize the completion of the construction, such support allocates most of this residual completion risk to the sponsors and will likely take the form of a commitment by the sponsors to contribute funds to the employer (above their base-equity commitments) in the event that the employer suffers cost overruns, or cash shortfalls when remitting debt service, prior to project completion. The level of sponsor support typically increases as the number of contract packages increases and can become one of the most important points of discussion with lenders when arranging debt financing for a project. Employers need to keep the level of potential sponsor support in mind when designing and negotiating the construction contract packages.

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The split-contract approach has the advantage of much lower cost compared to the EPC approach and also offers sponsor involvement in the design phase and construction process, which tends to suit sophisticated hydropower sponsors. The disadvantages of the split-contract approach include interface risk, coordination risk, low liability caps, less budget control, high transaction costs, non-uniform contract conditions, a greater need for sponsor oversight, an increased likelihood of warranty period disputes, and the possibility of parallel litigation risks. This seems like a long list but sponsors can employ various contractual techniques to mitigate these risks to some extent. One might also observe that only larger hydropower projects – say, perhaps larger than 50 MW in installed capacity – tend to justify the increased transaction costs and lower risk premium of the split-contract approach.

After deciding whether to follow an EPC or split-contract approach, the employer needs to decide whether to use bespoke drafting or a standard form. As noted above, the most widespread standard form is FIDIC. Employers following the EPC procurement approach commonly use the FIDIC Silver Book. Employers using the split-contract approach may use a variety of different contracts with varying scopes. Table 4.1 sets out one such approach with the typical FIDIC forms used.

Table 4.1 Typical FIDIC forms used for the split-contract approach in hydropower construction contracting

Contract	FIDIC contract	Work covered
Civil works contract	Red Book 1999	Civil works (site development, construction, tunnelling, earthworks, etc.)
Electro-mechanical contract	Yellow Book 1999	Electro-mechanical equipment (turbines, generators, transformers, etc.) design, supply, installation, commissioning and testing
Transmission works contract	Yellow Book 1999	Transmission line and facilities design, construction and installation
Hydraulic steelworks contract	Yellow Book 1999	Hydraulic steelworks (gates, penstock, etc.) design, construction and installation
Engineering agreement	White Book 2006	Engineering consultancy services including detailed design and contract administration
Interface agreement	Bespoke non-FIDIC contract	Coordination and interfaces among contractors, common dispute resolution, bonus scheme

A critical contract for the split-contract approach is the interface agreement. This agreement manages interface risk among the various tender packages, creates a forum for contractors to work through interface issues among themselves and provides for a common dispute resolution process for all contractors, the engineer and the employer. It can also contain a bonus scheme for early completion. No standard form exists for the interface agreement. Some contractors welcome the interface agreement and see it as a constructive way to provide a regime to cooperate with the other contractors towards the common goal of delivering a project by its scheduled completion date. Other contractors tend to resist the whole concept of an Interface Agreement because they see it as a source of liability additional to their main contract.

Some utilities with a strong hydropower tradition have an in-house design function but most hydropower project sponsors/employers today contract out the detailed design of a

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hydropower project, whether as part of the EPC contract under an EPC contract approach or to an independent design engineer if following the split-contract approach. In a FIDIC context, the consultant carrying out the design pursuant to a FIDIC White Book contract will often also act as engineer under the other FIDIC contracts used (usually the FIDIC Red Book for the civil works and the FIDIC Yellow Book for electro-mechanical works, and hydraulic steelworks to the extent tendered separately). Under FIDIC, the owner's engineer administers all claims, performs quality control functions, proposes/negotiates variation orders with the contractor and otherwise manages the construction process for and on behalf of the employer. An employer may modify this engineer role somewhat depending on the degree that it desires to directly involve its own or sponsor employees in the contract administration. Furthermore, some employers may wish to split the design and engineer functions so that they have someone to oversee the work of the designer, though the interfaces between those roles can make such a split challenging.

Under the FIDIC Red Book and the FIDIC Yellow Book, a contractor may claim time and cost for Unforeseeable sub-surface conditions. FIDIC defines 'Unforeseeable' as 'not reasonably foreseeable by an experienced contractor by the date for submission of the Tender'. Under the FIDIC Silver Book, the contractor 'accepts total responsibility for having foreseen all difficulties and costs of successfully completing the Works'. In each of the Red, Yellow and Silver Books, the contractor is discharged from further performance 'if an event or circumstance outside the control of the Parties arises which makes it impossible or unlawful for either or both Parties to fulfil its or their Contractual obligations'. Irrespective of the type of contract used, the risk of unforeseen geological (or subsurface) conditions represents one of the most challenging risks to manage during the construction of any hydropower project and particularly on any project which contains tunnels. To help mitigate this risk, employers should allocate significant resources for geological surveys of the project site and tunnel locations. The inclusion of a geological baseline report in any construction contract for a hydropower project which may suffer significant unforeseen geological conditions increasingly seems to represent best practice, encouraged also by the insurance industry.

Long construction periods, high construction risk and high construction costs do not have to mean high transaction costs and long negotiation periods for international hydropower construction contracts. However, choosing the wrong procurement method or allocating risk unfairly will certainly have an adverse result, and that is even before the groundbreaking ceremony. The above gives a brief overview of only a handful of the large number of issues which need to be overcome and details which need mastering in order to close an international hydropower construction contract, a critical step towards the execution of a successful hydropower project.

The contributions of Alex Blomfield to this textbook have been adapted from a paper given by him at the HYDRO 2013 Conference, on 7 October 2013, in Innsbruck, Austria, organized by *The Journal of Hydropower and Dams*.

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4.6 Engineer procure construction management (EPCM)

From the contractor's point of view, the purpose of EPCM is to provide services over and above delivery of construction works or plants. A cursory examination is enough to reveal that EPCM projects fall under the category of CM delivery methods. The CM contract (being a professional service agreement) can be considered a variant of an agency agreement. The main difference between EPCM and the standard CM model is that an EPCM contractor will also provide design and other engineering activities in their own respective capacities.

4.6.1 Key competencies of the EPCM contractor

As such, the EPCM contractor is mainly responsible for the following:

- detailed design for realization – sometimes even the basic design (FEED), according to employer requirements;
- procurement of construction works, deliveries of material, equipment and plants; and
- contract management and administration.

An EPCM contractor acts as an intermediary between the employer and their contractors but is not responsible for the construction activities carried out, nor the material, equipment and plants delivered.

An EPCM employer must coordinate and supervise realization and have adequate human resources and suitably qualified and experienced employees. This is because all potential claims for damages arising during realization are part of the employer's allocated risk.

Liabilities for breach of EPCM contractor obligations typically relate to the following:

- delivery of design;
- budget preparation;
- time schedule preparation;
- management of procurement;
- coordination of the design and construction works.

Regarding the above points, it will likely be difficult to prove unambiguously the causality between breaches of EPCM contractor obligations and damage done.

Friction over liability may further arise in connection with the design of key plants themselves, or with the responsibility for fitness for purpose of the plants subject to expected performance and other technical criteria. Neither EPC nor EPCM contractors will be willing to assume this responsibility and both will want to considerably limit their liability – unless they themselves will be the contractors selected to deliver the respective plants.

Concerning the motivation of an EPCM contractor to keep to the anticipated budget, the following should be mentioned. The EPCM contractor is paid on a 'cost plus

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basis', which means that actual costs plus profit margin and overhead expenses are reimbursed. A contract with a target price can motivate the EPCM contractor to keep to or reduce the budget. Projects with 'target prices' are characterized by the fact that the employer and the contractor share not only the money saved below the level of the agreed target price, but also any losses, i.e. price increases as against the agreed target price as per the pain/gain mechanism.

A situation where an EPCM contractor guarantees, with a high level of certainty, that the bid price will be kept to cannot be expected. The contract must therefore contain a detailed provision defining the cost control methods to avoid unnecessary increases.

A similar situation arises where responsibility for keeping to the time for completion schedule is important. The EPCM contractor is not responsible for individual construction and plant contractor performance, but is responsible for timely delivery of the design. EPCM contractors must also be responsible for delays caused by negligence in procurement, coordination and management. The EPCM contractor can be motivated to keep to the budget with an incentive, such as a timely completion bonus. Even under EPCM, the employer must engage employees capable of determining who caused a particular delay and to what extent. Therefore, the contract must also contain a clear and elaborate dispute resolution mechanism.

The following example can serve to illustrate the use of the EPCM model. An entrepreneur, with other participants, run an extensive network of petrol filling stations and decide to expand the business vertically by entering into fuel production. To meet this purpose, they further decide to build a brand-new refinery. An EPCM method was bilaterally selected during the negotiation process with the most promising potential contractor.

Both parties found the selected solution satisfactory. The contractor is willing to provide the employer with their know-how, experience and construction management skills. The contractor understands that there is lower level of risk offered to them by this EPCM model. The employer, on the other hand, can recruit the necessary human resources which allows them to grow independently of the contractor. Using the 'learning by doing' method, the EPCM contractor will then hand a considerable portion of necessary experience over to the newly set up employer's team during realization.

4.6.2 Main advantages and disadvantages of EPCM

The following are commonly observed advantages of EPCM projects:

- Reduced costs in cases of smooth realization of work, i.e. no main contractor's surcharge has to be paid for project risks.
- Broader access to contractors' market – breaking down into works packages procured broadens the choice of contractors.
- Flexibility – all required variations, such as those relating to the scope of work can be easily and directly agreed upon by particular contractors.

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- Lower risk of non-performance or contractor insolvency – risk is spread to facilitate fewer 'sub-risks' allocated to more contractors.
- Single point responsibility for the design and coordination of the works.

The following are commonly observed disadvantages of EPCM projects:

- Difficulty in coordinating individual contractors (compatibility of plants, coordination of sequencing and the like), the success of which largely depends on the EPCM contractor's experience.
- Difficulty in allocating and demonstrating responsibility where individual contractors should fail.
- Difficulty in coordinating liabilities between the EPCM contractor and the main plant contractor.
- Lower level of contractual penalties and liquidated damages in contracts with smaller contractors.
- High demands on employer capacities.
- Non-conventional delivery method limits available financing options; this delivery method might appear risky to lenders. See Loots and Henchie (2013) for more details.

4.6.3 Key issues of the EPCM delivery method

Key issues that must be dealt with whenever an EPCM contract is being prepared are as follows:

- Selection of competent EPCM contractor (mainly the set up of the criteria to meet this purpose).
- Setting up of a contractual and commercial relationship between the employer and the EPCM contractor (especially the EPCM contractor supervision method).
- Defining the algorithm to determine the level of the EPCM contractor's remuneration in respect of optional motivating bonuses and relationships with other contractors.
- Assessing the EPCM contractor's responsibility for keeping to budget and the time schedule.
- Sharing of liabilities between the EPCM contractor and the main plant contractor.
- Relationship between the EPCM contractor and other key construction contractors.

The use of the EPCM delivery method in the mining industry by Mark Berry (UK) and Matthew Hardwick (UK)

Most mining projects require the delivery of process plant infrastructure, whether relating to initial refinement and the sorting of raw materials at the mine site, for transport and secondary

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processing elsewhere, or full processing to final product at or near the mine site for sale direct to the relevant off-take market. Indeed, there is a trend for the governments of for example African countries to require a greater amount of in-country processing/refining in order to increase the economic benefit to the country of the natural resources.

The need, however, for good supporting infrastructure (e.g. road, rail and port facilities, etc.), particularly in Sub-Saharan Africa, to facilitate transportation of the raw materials as refined product, often means that there is a need for a number of separate infrastructure packages requiring delivery before the project can be realized and before the asset can be placed into full operation and production. The lack of supporting infrastructure in Sub-Saharan Africa often means that the realization of a mining project involves high levels of capital expenditure, with construction delivery costs running into billions of dollars.

The EPCM contract structure is used across a number of sectors, but has been particularly prevalent in the mining sector where its use has more recently become a market norm, particularly for projects in Africa. For such projects, the perceived 'country risk', the size of the project in terms of initial capital requirements and the need for delivery of a number of separate works packages over a prolonged and often fragmented procurement period, has tended to mean that no single contractor has been willing or able to offer a single turnkey EPC solution. Even if this were to be achievable, the level of contingency included in the EPC price would be likely to impact on project economics and affordability for the employer.

While sometimes confused with the EPC contracting solution (simply because of the use of a similar acronym), the EPCM and EPC contracting solutions are very different in terms of the nature of the obligations undertaken and the risks assumed by the respective contractors. An important difference between the two contract structures is that an EPCM contractor will not usually accept time or cost overrun risks: these are the risks that are retained by the employer. The employer will therefore need to manage these risks with the professional assistance and support of the EPCM contractor through the construction and equipment/plant supply chain.

The quality of the EPCM contractor's performance will be determined by reference to the extent to which it has performed its services in accordance with the level of skill and care required by the EPCM contract, rather than by reference to the achievement of overall project budgetary or scheduling targets.

It is usual, however, for EPCM contracts to incorporate contractual 'incentivization' provisions under which the EPCM contractor will achieve a profit 'uplift' should key contract targets (e.g. the achievement of key construction milestones by agreed milestone dates, project delivery for a capital cost equal to or less than that budgeted, etc.) be achieved or exceeded. In a hard market, EPCM contractors may additionally agree to place an element of their profit at risk should the key targets not be achieved. While the EPCM contractor will not be standing behind achievement of the key targets (in terms of liability), the incentivization provisions are seen as an important tool in encouraging and securing proper performance. Where there is significant cost and/or time overrun, these provisions may, however, lose their benefit and instead the employer's leverage tends then to be limited to restrictions on the EPCM contractor's right to recover profit on the increased levels of work required above that budgeted at the date of the EPCM contract.

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EPCM contractors will expect to limit their liability under the terms of the EPCM contract. The liability accepted by the EPCM contractor must be appropriately sized but the ethos of EPCM contracting is that the EPCM contractor is providing consultancy services only and is not underwriting project delivery risk. The size of the liability caps under the EPCM contract will therefore be reflective of this and are usually in the order of the amount of 'profit' that the EPCM contractor expects to make on the budgeted manhours it charges for the performance of the EPCM services.

An important negotiation point will typically be the extent to which the EPCM contractor is responsible for the consequential losses flowing from its failure to perform. Experience shows that EPCM contractors are extremely reluctant to accept such liabilities. This would leave, for instance, the cost risk with regard to any re-work required as a result of defective design produced by the EPCM contractor with the employer. This risk may, however, be mitigated to the extent that professional indemnity insurance is available to cover these types of losses. If this is the case, the EPCM contractor may be prepared to accept these consequential liabilities on an unlimited basis, to the extent covered by the relevant insurance policies. There will then be a negotiation to be had around insurance recovery risk and the party responsible for the insurance deductible.

Many EPCM contractors look to limit their liability to 're-performance' of defective services only. This is a difficult concept for an employer to accept, particularly given the likely consequential losses flowing from the relevant defective services. It also ignores the purpose of any professional indemnity cover placed or available to cover project risk. Furthermore, it is important to remember that many liabilities that should be captured by the EPCM contract liability regime may not be remediable through re-performance of defective services alone, so this approach will not provide for an appropriate remedy in many circumstances. Ordinarily, re-performance of defective services should instead be considered a cost of performing the services for which the employer will have made payment, and not a liability.

Given the nature and extent of the liabilities assumed by an EPCM contractor, the EPCM contract will not contain the types of sanctions for breach and requirements as to security typically found in an EPC contract. The focus will instead be on the use of provisions concerned with the restriction on the right to payment, restriction on the right to profit recovery, and rights of the employer to step in and self-perform and/or terminate and permanently replace the EPCM contractor.

It is important to recognize that an EPCM contractor will not itself perform construction works. The EPCM contract is essentially a professional services appointment under which the EPCM contractor's services will usually be limited to the production of detailed design and the procurement, construction management and coordination of the works and services necessary to deliver the project.

The EPCM contractor will be responsible for the development of detailed design, which may incorporate conceptual design produced by or on behalf of the employer during the project feasibility stage. The employer will look to the EPCM contractor to check any conceptual design to verify its accuracy, completeness and fitness for purpose. The extent to which employers can expect the EPCM contractor to take full risk in conceptual design will, however, vary from one

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project to the next and will ultimately depend on the liability provisions agreed in the EPCM contract.

The detailed design responsibilities of the EPCM contractor will typically cover most aspects of project design. It would not be unusual, however, for specific aspects of the project to be packaged up into separate EPC packages (e.g. on site power production) or design and build packages (e.g. buildings housing the process plant). These packages will remain under the administration of the EPCM contractor but the EPCM contractor's design responsibility in relation to them will be limited to a checking and coordination role.

Where the EPCM contractor is responsible for detailed process design, it would be usual for the EPCM contractor to guarantee levels of plant performance/output. The EPCM contract should therefore document the performance testing regime which should reflect the procedures for establishing actual plant output/performance and the extent to which the levels of plant performance/output guaranteed by the EPCM contractor have been achieved.

The EPCM contractor should be responsible for any shortfall in performance/output from that guaranteed, save where such shortfall arises due to risks retained by the employer. Retained employer risks in this context will usually include the occurrence of supervening events outside of the control of the parties, out-of-specification feedstock and poor operation of the process plant, in each case, insofar as the relevant circumstance impacts on testing or the achievement of the guarantees. The nature of employer-retained risks in this regard will tend to be more widely defined than those adopted under an EPC solution. This, among other things, is reflective of the fact that the EPCM contractor will have less day-to-day control over the construction and assembly of the plant and, of course, accepts a more limited liability position. This being said, it is not usually the case that the EPCM contractor is relieved of liability upon the occurrence of an employer risk event. Employers will instead look for the performance testing regime to be repeated when the relevant employer risk has subsided.

Where the guaranteed levels of output/performance are not achieved but output/performance is above a minimum required level, the EPCM contractor may, in lieu of a requirement to oversee further rectification works, be required to pay performance liquidated damages. The performance liquidated damages payable should reflect the costs, losses and liabilities of the employer arising from underperformance of the plant. This liability will usually be subject to a limit beyond which the residual underperformance risk will rest with the employer.

The EPCM contractor will be allocated responsibility for the overall procurement strategy. He will be responsible for splitting the works and supply elements into appropriate packages with a view to minimising interface risk. Where interfaces are created, the EPCM contractor should be responsible for implementing a strategy to manage them. He will additionally source contractors, consultants and the necessary plant and equipment in consultation with the employer and in accordance with employer's requirements and any assumptions established at feasibility stage.

Experienced EPCM contractors will normally hold a suite of standard form contracts (with appropriate employer-friendly amendments) that can be used for the procurement of the relevant packages. The FIDIC forms of contract remain the most common ones but given the provenance of many resource companies, it is also quite usual to see the Australian Standards form employed. Employers will want to take an intrusive role in the negotiation and approval of these terms, particularly for important and/or high value packages which could materially impact on the achievement of the key project targets should problems arise.

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The employer will ordinarily enter into all works and supply contracts. While we have seen the EPCM contractor assume the role of contract counterparty, we would suggest that the former position is more appropriate for the employer, since it will retain direct control of the supply chain arrangements, should relations with the EPCM contractor break down. Irrespective of the approach taken, the EPCM contractor will be responsible for the day-to-day administration of the works and supply contracts and the EPCM contract should describe the extent of the EPCM contractor's authority in this regard, with certain key rights being expressed as exercisable only with the consent of the employer.

The EPCM contractor will be allocated responsibility for overall management of the carrying out and completion of the works. This will include the coordination of the works and services being procured on the employer's behalf to achieve completion of the works in accordance with the project schedule, the project budget and to meet the required technical and performance specifications.

The construction management services will also typically include the management of health and safety at the site, programme management and control, capital expenditure monitoring and control, the management of disputes between the employer, the works contractors and/or the suppliers, the establishment of quality assurance systems, the monitoring and certification of completion and handover of the relevant packages in accordance with the procedures agreed with the employer and the management of the remedying of defective works and/or services provided by other parties.

There is no international standard form template contract for the EPCM contracting solution, unlike for EPC turnkey or traditional build contracts.

EPCM contracting is essentially contracting for the delivery of professional services. There are numerous published standard forms of contract (e.g. the FIDIC White Book) that could be adopted for these purposes. A typical professional services appointment will, however, tend to lack the sophistication necessary to readily address many of the issues that arise or need to be considered in the context of EPCM infrastructure delivery (e.g. incentivization structures, performance guarantees and performance liability regime, etc.). It is usual therefore that bespoke solutions are adopted by the parties.

The EPCM contract will provide for the EPCM contractor to be paid on a rates reimbursable basis. The rates should include a cost and overhead element only with the EPCM contractor's profit being recovered under a separate regime. Often employers will look for the EPCM contractor to warrant that the rates do not include any profit element and will retain rights of audit in respect of the same. Any profit disclosed or detected through audit will then be payable back to the employer on demand, or by means of contractual set-off.

Employers may require the EPCM contractor to guarantee that the aggregate level of the rates of the reimbursable element, which was estimated at the time of the contract signature for performance of the services necessary to achieve realization of the project, is correct. Where it can be established that the EPCM contractor failed to prepare the estimate in accordance with the level of skill and care required by the contract, the employer would have a breach of warranty claim against the EPCM contractor. The extent to which any such claim would provide the EPCM contractor with any real leverage in a material cost overrun scenario may, however, be open to question. It is usual that employers instead concentrate on detailed cost monitoring procedures aligned with early warning provisions, to identify cost overrun at a point at which the likely cause can be identified and mitigated.

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Less usually, we have seen EPCM contractors in the mining sector accept a cap on the reimbursable element of their fee. While this looks attractive from an employer's point of view, the overrun may of course arise for reasons outside of the EPCM contractor's control. Employers may therefore be reluctant to restrict further payment at the point at which the EPCM contractor's assistance is needed the most.

The EPCM contractor's profit will usually be expressed as a fixed percentage of the estimated rates reimbursable element. This will not be subject to increase where the cost of the services increases beyond the estimated rates reimbursable element agreed at the contract signature. The availability of an increase in profit in these circumstances may act as a negative incentive to the control of cost overrun.

Most developing countries have tax regimes which seek to control, through taxation, the amount of investment in a development that does not become directly invested in the country (e.g. professional services fees). Withholding tax is the most common form of taxation that needs to be considered when structuring the construction development stage of any project.

It would be unusual for any EPCM contractor to bear the risk of withholding tax and, if it did, then it would simply become a 'cost' to the project that would add to the overall project economics. It is important therefore for employers to give proper consideration to the structuring of construction contracting arrangements very early on in the procurement of an infrastructure project to obtain the early buy-in by the local tax authorities (either directly or through local advisers) to those arrangements.

One of the most common means of mitigating withholding tax exposure is to adopt a split 'onshore' and 'offshore' contract structure. This usually means that there will be two contracts, each entered into by a different EPCM contractor entity and each containing different scope of services. For example, there will usually be one contract for those services which may take place outside of the country in which the works are being delivered, payment for which may therefore be structured to avoid withholding tax. This contract will typically be entered into by a non-local EPCM contractor entity (the 'offshore contract'). There will then be a further contract for those services which must be performed in the country in which the works are being delivered, such as the EPCM construction management services (because there must be personnel present on the ground in order to carry out the supervision), payment for which may be subject to the relevant local withholding tax regime. This contract will typically be entered into by a locally registered EPCM contractor entity (the 'onshore contract').

The obvious risk to an employer with a split structure is that he is required to deal with two contractors, each with a separate scope of work and separate rights and obligations. It is important therefore that these contracts are well drafted and dovetail together.

The employer will usually look to limit its exposure to breach by the separate onshore and offshore contractors by putting in place further contractual arrangements which provide for the offshore EPCM contractor entity (or a suitable parent) providing a performance and financial guarantee (backed by indemnities and, possibly, suitable financial security) in respect of discharge by both the onshore and offshore entities of their respective and collective obligations. This guarantee (which could be wrapped into the offshore contract) is often referred to as an 'umbrella agreement'.

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However, in jurisdictions where the tax authorities do not recognize this 'split' due to the presence of the guarantee (or 'wrap') provided by the umbrella agreement, then further careful consideration is required in the drafting of the onshore and offshore contracts in order to deal specifically with the above concerns.

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4.7 EPC versus EPCM

The EPC method is used most frequently where large, expensive projects are to be constructed within a sophisticated industrial environment where unique know-how, technologies and processes are typically used. Higher levels of risk, failures and related damages appear where complicated systems are used.

The engineering, procurement and installation or construction of the work are diverse activities that have to be managed and coordinated. Hence, high demands are placed on individual contractors. Only a contractor who is part of a large organization with adequate human and material resources can accomplish such a mission. It is appropriate to use the EPC method where the employer is not in possession of the know-how and resources (human and material) without which they could not do the work on their own.

An EPC contract may also be used where the work is not too demanding or unique but the employer is too inexperienced or lacks sufficient know-how to carry it out. They may be, for example, an investor using the EPC contract as a form of outsourcing or when working with vast public sector investments, such as the development of industrial capacities, power engineering, and the like.

By adopting EPC, the employer benefits from the fact that the resulting work passes into their ownership, say, as a turnkey item. This may lead to considerable savings of resources and capacities. Another substantial advantage on the employer's

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side is the employer's position in enforcing related contractual obligations. This allows claims arising from work (such as damage liability) to be made against one particular contractor rather than against a number of smaller individual contractors collectively.

Another argument in favour of EPC contracts is that the contractor has unique know-how and resources at their disposal which the employer does not have and cannot or does not want to acquire. This puts the contractor in a rather unique position versus the employer. The position is reflected in the intricate set-up of an EPC contract.

Despite being similar in name, the EPCM contract is different in concept from its EPC counterpart. The difference is that the EPCM contract delegates a substantial portion of the activities – and thus the related risks – to the employer. The contractor then enjoys a more 'comfortable' position and reliable profit rate.

The EPCM contractor will provide the design and contractually agreed engineering. In matters of procurement (purchases) and construction/erection, however, the contractor will only provide their know-how in the form of management and coordination. They do not perform these activities themselves and let others be responsible for them, in contrast to EPC. Typically, the contractors and construction/installation companies enter into contracts directly with the employer. The EPCM contractor will manage and coordinate the procurement and construction/installation processes in full. They are then entitled to receive remuneration from the employer. This may include motivating bonuses, if any, generated, for example, by positive differences in terms of actual cost versus target price.

Such concepts imply a higher level of risk on the employer's side. The employer must manage contractual agendas and communicate with many different contractors responsible for individual parts of the work. In other words, the responsibility for various undertakings and misconduct and execution of (contractual and statutory) rights is shared by a variety of entities which makes the project even more demanding for the employer. It is further worth mentioning that a simple cost-plus principle may result in an increase in employer costs, such as contractor remuneration when determined on the basis of total costs for work completed. This may easily distract the contractor from taking efficient cost-minimising measures where the EPCM contractor remuneration system fails to be properly set up.

On the other hand, the EPCM model, if set up properly, may save time and money, mainly on behalf of a well-experienced employer. Costs may fall where the employer will directly carry out numerous activities that would otherwise be carried out by an EPC contractor. As for reducing contractor risk, the EPCM may also help to avoid the contractor's risk surcharges, which are often seen in EPC projects.

Last but not least, the EPCM model may help to train the employer's own capacities when cooperating with a well-experienced contractor.

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5 Unification and Standardization in International Construction

5.1 Unification of contracts

All fields of human activity undergo natural unification and harmonization over time. Following successful unification, business negotiations become easier and cheaper, communication and management are simpler and distrust vanishes. Complications and disputes can then be settled with less effort, especially in international transactions.

In business, in general (and in construction, in particular), this issue is more complicated than anywhere else. In the past, construction used to be local by nature as an industry with local contractors and employers devising and implementing habitual rules which were rigid and difficult to alter or unify.

5.2 Unification per law, principles and sample documents

Contractual relationships are subject to unification at three levels:

- Law;
- Principles;
- Sample documents.

5.2.1 Unification per law

Parties intending to enter into cross-border contractual relationships have a general freedom to choose the law which will govern their contract. A mandatory provision of law (i.e. the governing law) will prevail over a private choice of law with which it is in conflict. In general, if there is no choice of law available to the parties to a particular contract and the contractual relationship contains an international element, the regulations of private international law will have to be considered in finding the

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relevant governing law. Choice of law conflicts are complex and difficult to resolve. For this reason it is advisable to select the governing (applicable) law *before* entering into a contract. Failure to do so could lead to unexpected outcomes or unexpected shifts in risk allocation because of unforeseen mandatory provisions of substantive or procedural law.

There is no particular regulation in private international law applicable to international contracts for works. By way of comparison, contracts for sale of goods, for example, fall under the *United Nations Convention on Contracts for the International Sale of Goods* (CISG).

The Convention on the Law Applicable to Contractual Obligations of 19 June 1980 ('the Rome Convention') became crucial for contractual obligations with international elements by creating a common choice of law system for contracts within the European Union. The Rome Convention was replaced by Regulation (EC) No. 593/2008 of the European Parliament and Council by way of *The Convention on the Law Applicable to Contractual Obligations* of 17 June 2008 ('Rome I') and by the Regulation (EC) No. 864/2007 of the European Parliament and Council on 11 July 2007 by way of *The Convention on the Law Applicable to Non-Contractual Obligations* ('Rome II'). Rome I, Rome II, Rome Convention (Article 3/1) and international private law respect the choice of law principle.

If there is no choice of law or if the choice of law is invalid, the applicable law will usually be the law of the state where:

(a) the works are executed;
(b) the contract was concluded;
(c) the contractor's business is registered; or
(d) the litigation or arbitration takes place.

The most significant example of the unification of law is the above-mentioned CISG, which, unless expressly excluded by contract, is automatically applicable to contracts for cross-border sales of goods in EU member countries.

5.2.2 Unification per principles

As a rule, the governing law will be agreed upon by the contracting parties to an international construction project. A situation, dispute or particular problem without any clearly defined solution either in the contract or in the governing law can further be encountered. Business usage and general principles of law will often have to be used where there is a gap in the contract and/or governing law.

In terms of unification of principles, the most significant are the *UNIDROIT Principles of International Commercial Contracts* and *The Principles of European Contract Law*. These principles are a set of model rules drawn up by leading contract law academics in Europe. *The Principles of European Contract Law* are based on the concept of a uniform European contract law system and were created by the Commission on European Contract Law (the Lando Commission). The latest attempts are *The Definitions and Model Rules of European Private Law* or the *Draft Common Frame of Reference* (DCFR) prepared by the Study Group on a European Civil Code and the

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Research Group on EC Private Law (Acquis Group) and based in part on a revised version of the *Principles of European Contract Law*.

The Unidroit Principles have been referred to in a significant number of publicly reported international arbitrations (Charrett, 2013).

It should further be mentioned that unification is also imposed by legislative and quasi-legislative activities, treaties, international conventions, economic and political unions. Furthermore, individual usages and customs in the construction business which are generalized in principles deserve a separate subcategory within the scope of *lex mercatoria* called *lex constructionis*. The *lex constructionis* principles come from the general *lex mercatoria* principles with necessary modifications due to construction specifics, see Section 5.10.

5.2.3 Unification per sample documents

Unification in the field of sample documents is represented by rules of trade such as the International Commercial Terms ('INCOTERMS') and sample forms of contracts published by FIDIC and many others.

INCOTERMS

INCOTERMS are a set of international rules for modes of transport expressed by a series of three-letter trade terms related to common contractual sales practices. INCOTERMS came into being in Paris in 1936. They were issued by the International Chamber of Commerce to avoid problems in connection with the nature and differences between business codes in different countries. The eighth edition of the INCOTERMS (2010) was reduced to 11 rules and came into effect on 1 January 2011.

The INCOTERMS rules are intended to clearly communicate the duties, costs and risks associated with the transportation and delivery of goods. They also define where and how the goods are to be transported, and allocate responsibility to the parties. For example, Who bears the loading costs? Who is in charge of transportation? Who is responsible for damage and how and when they are to be paid? Who is to insure? Who is to pay customs and other duties? Who is to unload the goods and pay for them?

The FIDIC forms of contract define the most significant terms to be used in international construction contracts. Attention will be paid to the FIDIC forms in respective sections of this book. Another sample form receiving increasing attention in recent years is known by its abbreviated name of the NEC (the New Engineering Contract). For further details of the NEC, see Chapter 13.

5.3 Lenders and their influence on unification

5.3.1 European Union funds

The drive of international developers to invest in international construction projects using domestic or international construction companies and the expansion of the European Union (the EU) are the main reasons why the FIDIC forms of contract

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continue to spread across Central and Eastern Europe. The EU requires the use of the well-established sample forms of contract as a pre-condition for potential financing of jointly financed projects. This condition first appeared within structural funds such as the Instrument for Structural Policies for Pre-Accession (ISPA). ISPA found its focal point in financing infrastructure projects in the fields of environment and transport. Its aim was to simplify the implementation of the *acquis communautaire* (a law of the EU) in the candidate countries during the period from 2000 up to their membership to the EU by making contributions to sustainable development in these countries.

5.3.2 The European Investment Bank (EIB)

Another impetus for the use of FIDIC forms was provided by the European Investment Bank's requirement to use these forms in the projects financed by it. Established in 1958 by the Treaty of Rome, the European Investment Bank (EIB) is an EU institution set up to provide credit to public and private entities. The money lent is intended for projects that will benefit Europe, keep EU regions in cohesion, support small and medium-sized businesses, protect the environment, support research and development, improve transport and assist the energy industry.

The EIB is a non-profit bank and its activities aim to achieve political objectives and provide long-term credits for capital investment projects (mainly to cover long-term activities). The EIB does not, however, provide subsidies. Owned by the EU member states, the EIB cannot lend more than 50% of the total project costs. The projects which are financed are meticulously selected and must meet strict criteria. The EIB also fosters sustainable development in potential candidate countries, in EU neighbour states and in other partner countries.

5.3.3 The European Bank for Reconstruction and Development (EBRD)

The European Bank for Reconstruction and Development ('EBRD') provides project financing for banks, industry and businesses, new ventures and investments in existing companies. The EBRD also works with publicly owned companies. The EBRD provides loan and equity finance, guarantees, leasing facilities and trade finance. Typically the EBRD funds up to 35% of total project costs.

The bank invests only in projects that would not otherwise attract financing on similar terms. The EBRD is committed to undertaking operations throughout the region and has engaged in projects in each country where it has a presence. To coordinate local activities, the EBRD has established resident offices in all of these countries.

The EBRD is composed of multinational staff and an in-house Board of Directors representing the shareholders (64 countries plus the EU and the EIB).

The EBRD develops partnerships with local and international business and the investment community. The bank acts in close cooperation with all members, public and private entities, and all multilateral institutions concerned with the economic development of, and investment in, countries from central Europe to central Asia.

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These include the EU, the EIB, the World Bank Group, the International Monetary Fund and the United Nations and its specialized agencies.

The EBRD entered into a licence agreement with FIDIC which gives entities involved in EBRD-financed projects free access to the FIDIC-MDB Harmonised General Conditions of Contract for Construction (http://www.ebrd.com/downloads/procurement/project/mdbgcv3unprotected.pdf). Although the EBRD supports the use of these General Conditions, they are not mandatory and other internationally recognized forms of contracts may also be used.

5.3.4 The World Bank (WB)

The World Bank (WB) is managed by 188 member countries and is comprised of two institutions: the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA). The IBRD's objectives are to reduce poverty in middle-income nations and countries with bad credit ratings. The IDA focuses exclusively on the world's poorest countries. These institutions are part of a larger body known as the World Bank Group.

Established in 1944, the WB is headquartered in Washington, DC, and employs 9,000 people in more than 100 offices worldwide.

Six strategic themes drive the WB's work: (1) the world's poorest countries; (2) fragile and conflict-affected states; (3) the Arab world (4) middle-income countries; (5) global public goods issues; and (6) the delivery of knowledge and learning services.

The WB provides low-interest loans, interest-free credit and grants to developing countries. These support a wide array of investments in areas such as education, health, public administration, infrastructure, financial and private sector development, agriculture and the environment and natural resource management. Some projects are co-financed by governments, others by multilateral institutions, commercial banks, export credit agencies and private sector investors.

The WB recommends FIDIC forms of contract for projects where they lend money.

5.4 Standard form of contract in a governing law context

National substantive laws and regulations rarely provide sufficient rules for large construction projects. On the contrary, local commercial laws tend to be inadequate in terms of dealing with contract administration, price, time, variation procedures, risk allocation and claims issues. The use of extensive sample documents has assisted in filling these gaps and has led to greater certainty and foreseeability in large construction projects.

Governing law ordinarily states that general terms and conditions, as prepared by professional or other organizations, will be part of the contract merely by being referred to. The position these terms and conditions are to occupy within the hierarchy of the contractual documents has to be defined in the contract.

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5.5 Purpose of sample documents in construction projects

The long-term use of sample documents in a certain industry sometimes leads to their incorporation in local public procurement legislation. In this way, the FIDIC forms have become part of public procurement law in, for example, Central and Eastern Europe and the Middle East. Developments in some Arabic countries are now so advanced that standardized conditions or their parts have become mandatory elements of local public procurement law.

Specific provisions are encountered in international construction contracts. For example, large construction contracts often foresee the participation not only of the employer and the contractor, but also of a neutral third party (the contract administrator) authorized to make decisions and certify various operations or activities performed by the contracting parties. The meaning and effect of those certificates will always depend on a particular contract and the governing law. Concerning their meaning, these certificates usually reflect the as-built state. Such a certificate is scrutinized at a point in time specified in the contract and is usually a pre-condition for invoicing and payment. Contracts tend to include provisions that define the conditions upon which a performance certificate (or related payment) can be refused. It is not then surprising that numerous disputes arise at this point if the engineer proceeds contrary to the contract while issuing such certificates. British courts have ruled that the engineer is considered as incompetent in such situation, giving the contractor the right to claim payment even when lacking the certificate.

Complications also appear where common law principles are used in connection with completion where a distinction is drawn between such completion, thereby allowing the resulting work to be used for the agreed purpose (substantial completion) and fulfilment of the contractual commitment (performance). Most sample forms used in international construction projects build, therefore, on the substantial completion concept, coming from the common law. This approach presumes that the work has been taken over by the engineer, but without relieving the contractor of any of its contractual responsibilities. Only the performance certificate will have such consequences, once issued.

Typical features of international construction projects are discussed in other chapters of this book where common issues such as price, time, claims, variations and risk allocation are explained.

These and other common features of large international construction projects frequently dealt with in sample forms of contract have arguably become part of *lex mercatoria* (from the Latin for 'merchant law', i.e. supranational customs and rules of international trade).

International debates have been ongoing in professional circles for decades, but these efforts have not yet provided any statutory regulation for international construction contracts. The central question is whether such regulation is necessary at all. Even *lex mercatoria* itself owes its existence to the inadequacy and 'stubbornness' of written law. International traders very often conclude that they do not need any such national law in any case. Owing to customs and the inflexibility of commercial law, traders create their own habitual rules. This extends to resolving disputes

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in the least painful way by using their own agreed alternative methods which exist separately to those prescribed by the state.

These days, FIDIC forms (as a standardized law applicable to construction projects) are without doubt part of *lex mercatoria*. However, many questions remain as to whether they are anything more than general terms and conditions of contract prepared by a professional organization. For example, what is their relation to international principles of contract law, general principles of law or the principles that prevail in the construction industry or trade in general? Can they become an international business custom? Can the individual provisions of FIDIC conditions be used in disputes even when there is no reference to a FIDIC sample document in the contract (i.e. where such document is not a part of the contract)? Would the selection of *lex mercatoria* as the governing law of a contract be deemed applicable and can FIDIC be subsumed under this category as a suitable source of regulation? And, finally, can the FIDIC contractual conditions replace applicable law?

Another issue centres around the option to fill the gaps in a national law with supranational regulations and the possibility of using the FIDIC forms in this context (Mallmann, 2002).

5.6 Standard sample forms as a source of law

FIDIC conditions were not created with the intent of becoming a source of law. What is relevant, however, is how they are practically applied by contract drafters, parties to the contract and in dispute resolution.

FIDIC forms are sometimes used as a source of law in disputes resolved in arbitration where there is a gap between contractual provisions and the governing law. When there is doubt or uncertainty, adjudicators, arbitrators or judges fill these 'gaps' with generally accepted FIDIC form provisions. Similarly, FIDIC forms can be used to find out what clauses would be generally accepted in construction contracts before the project begins. For instance, it may be possible to compare unclear or potentially invalid clauses of a bespoke contract to a particular FIDIC clause at the negotiation stage.

The forms can further be used, when necessary, as a tool and reference to interpret particular contract clauses by judges, arbitrators or adjudicators. For example, if the contracting parties select the *lex mercatoria* as a contract governing law, a situation may arise where an arbitrator is left to analyse a particular provision of a contract that has been taken straight from a FIDIC form. In such a case, the arbitrator is more likely to interpret this clause in the original meaning given to it by FIDIC. This is likely to result in more consistent and predictable decision-making.

The FIDIC forms can therefore be categorized under the *dispositive law of international construction arbitration* (Mallmann, 2002).

In this way the FIDIC forms are used mainly where the *voie directe* (i.e. direct use of a suitable governing law at the sole discretion of an arbitrator) is used by an arbitrator considering a dispute as an *amiable compositeur* (i.e. they may refrain from applying the governing law with the consent of the contracting parties). A similar approach can also be chosen where arbitrators are authorized to resolve the dispute considering solely what they perceive to be fair and equitable (*ex aequo et bono*).

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Finally, in the case of *SocUti Pabalk Ticaret Sirketi v. SocUti Norsolor,* the court ruled that *lex mercatoria* can be applied without being chosen as governing law and without any authorization to decide as an *amiable compositeur*.

5.7 *Lex causae*

If there is a conflict of laws, *lex causae* (Latin for 'cause for the law') is the law chosen by the court from among the relevant legal systems to arrive at its judgment of an international case. Some academic circles admit that generally accepted sample forms of contract form part of such selectable law. However, a view is also held that such sample forms cannot satisfy the governing law criteria. A solution may be, where the parties decide, to combine sample forms with another body of law, such as a national law of a particular country. The statutes can also be combined within the limits of *dépeçage* (meaning that the individual parts of the contract will be governed by different codes of law).

With its forms containing a choice of law clause, FIDIC is actually anticipating the above. A law governing a particular contractual relationship is determined on a regular basis under particular conditions. As such, FIDIC does not foresee the use of its conditions as *contrat sans loi* (i.e. as contracts without any governing law).

The applicable governing law should be determined at the procurement stage and it is essential for the contractor to be made aware of the governing law while the bid is being prepared. The requirement that the contractor should prepare its bid competently – while not knowing the governing law, but only speculating on it – can hardly be deemed reasonable. If, at the time of bid preparation, the contractor does not know or cannot find out how governing law will protect or expose them in a dispute situation, this must surely influence the bid price.

Besides, the presence of public law aspects in connection with the realization of construction projects cannot be avoided. Contracts aside, other legal issues may arise in the areas of labour law, real estate law, environment protection and investment protection, and so on.

Several examples that highlight how governing law may affect the rights and responsibilities of contract participants include, for example, risks such as unforeseeable physical conditions (they will be allocated to the employer in some jurisdictions and to the contractor in others, irrespective of whether in a mandatory or dispositive way) or termination of a contract by the employer without giving any reason (i.e. at the employer's convenience).

There are countries (such as France, Belgium, Egypt, Malta, Romania and Tunisia) where there exists a special ten-year defects liability period that starts to run after the taking-over of the works. Sometimes, the contractor is obliged to be insured against the risks for the duration of the defects liability period.

Further examples of areas influenced by governing law are mandatory direct employer payments to subcontractors (such as in Poland and France), specific consequences of situations that give rise to major changes in project realization, various consequences of defective performance (such as the entitlement to claim for removal of the defects or to a discount from the contract price), and so on.

In every individual case, it is necessary to evaluate how the governing law and the customs will affect the contract.

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5.8 Interpretation

The contract alone may not always provide adequate interpretation provisions. This situation may occur where a comprehensive definitions section is lacking, the contract is poorly drafted, excessive technical language is used or the contract is silent on important matters. Using common interpretation rules can be of assistance but may not be adequate.

When considering the issue of interpretation, legal codes and related precedents need to be taken into account as well as published arbitration awards from across the globe. A selection of 'precedents' is published on a regular basis by the International Chamber of Commerce (ICC) in the *Journal du Droit International*. The ICC also publishes the *ICC International Court of Arbitration Bulletin* which sometimes focuses on construction disputes. It mentions in this regard (ICC, 2012) that there is a long time lag (10 – 20 years or more) between when a new edition of the FIDIC Conditions is introduced and when it comes into general use internationally. As a result, there are no dispute outcomes or extracts of awards dealing with the latest suite of FIDIC construction contracts for major works which were published in 1999. Outcomes are also available in the *Commercial Arbitration Yearbook,* the *International Construction Law Review*, the *International Arbitration Report* and other yearbooks and publications of the individual arbitration tribunals; however, the number of published awards is very low.

Trade usage cannot be omitted from interpretation if it comes into existence as a result of certain business collaborations. Its interpretation can also be based on principles either at the level of the *lex mercatoria* principles described above or at the level of international contracting principles drawn up in writing (such as UNIDROIT). Use of the *FIDIC Contracts Guide*, a helpful interpretation instrument published by FIDIC, is recommended, and it covers interpretation of the FIDIC CONS/1999 Red Book, P&DB/1999 Yellow Book and EPC/1999 Silver Book provisions. A larger number of interpretations are available for the individual sample forms in the *FIDIC Contracts Guide* – the only authentic guide published exclusively by FIDIC.

The interpretation used by arbitrators in award ICC 7910/1996 seems to be controversial in this regard. The issue at hand was that neither the second nor the third edition of the FIDIC Red Book gave a clear description of the procedural sequence where one of the parties was unwilling to accept the engineer's decision despite the fact that the decision should have been 'final and binding'. It was unclear if the dispute could be reviewed at arbitration. The arbitration tribunal proceeded to hear the case despite seemingly lacking the necessary jurisdiction. This complicated any future enforcement and enforceability of the award.

The arbitrators acknowledged the arbitration tribunal's problem but agreed with the plaintiff's argument that the tribunal did indeed have jurisdiction. This is because the matter was expressly dealt with in the fourth edition of the FIDIC Red Book which stated that: 'disobedience of an engineer's decision and resulting dispute may be referred to arbitration by a party'. However, the fourth edition did not form a part of the disputable contract. Such an argument will raise questions if it is possible to respect (in fact) the influence of an uninvolved third party (FIDIC) on a bilateral contractual relationship. It also confirms the extensive influence of FIDIC on international construction.

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The recent judgment of the Queensland Supreme Court in *Sedgman South Africa (Pty) Ltd & Others v Discovery Copper Botswana (Pty) Ltd* demonstrates that FIDIC users should refrain from reading and/or construing FIDIC forms of contract in the same way they read/construe domestic contracts. FIDIC forms should be read together with the existing guidance provided by FIDIC, and against the genesis of the clauses (Hök, G.S., 2014).

5.9 Trade usage and business custom

It must be possible to define, with certainty, a community who use the particular rules (e.g. the FIDIC conditions), otherwise the particular rules cannot be accepted as a trade usage in construction, i.e. as a business custom to the widest extent. The community can easily be identified in the form of lenders and employers (states, banks and investment funds), contractors (international construction companies able to comply with the demanding qualification criteria applied in large construction projects), and consultants – all respecting and using the FIDIC forms.

Another attribute is the repeated and long-term use of the particular rules with a general awareness that those rules are binding. FIDIC conditions, for example, have been used for more than 50 years and are still used to secure foreseeable development of a construction project and a balanced risk allocation by being consciously agreed only *inter partes* (Latin for 'between the parties'). The missing *opinio iuris* (Latin for 'an opinion of law or necessity'), being also the result of necessary updating of the individual provisions within the new versions, is an obstacle for the necessary *usus longaevus* (Latin for 'long-time use').

In connection with the FIDIC forms, it should be noted that in some countries the participants of construction projects use them only because they are forced to do so. Many lenders require use of a generally accepted forms of contract in the projects they support. FIDIC forms are often used for this purpose. It is common, however, that there is neither experience in using the FIDIC forms nor any adequate education of those involved in many countries. Often, the parties simply ignore the rules stated in FIDIC forms and do everything as they had in the past. Consequently, many disputes and ambiguities arise because FIDIC forms impose numerous, strict and formal requirements on the parties.

The FIDIC forms, having now been used for a prolonged period of time, have set an international benchmark that makes the international construction business easier. In many countries, however, employers have changed the general part per the particular conditions to such an extent that the original risk allocation and systematic of FIDIC forms have shifted to create a new bespoke contract that has nothing in common with FIDIC forms. This was caused mainly by a lack of experience and the desire to shift more risk to the contractor – effectively destroying the main advantage of a sample form of contract (i.e. the foreseeability of the contractual relationship) with the parties often ending in dispute because of inefficient, unfair risk allocation and ambiguous contractual terms.

The original text of a particular FIDIC form is an elaborate document with many internal interconnections. It is easy to upset this system per particular conditions but hard to carry out a project to successful conclusion with such disruptions.

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The argument that a particular trade usage or business custom was created between the parties or in general can often be encountered while disputes are being resolved. It is reasonable and natural.

Mainly as result of constant development in the individual segments of business, the law of international merchants is broken down into individual domains. As such, specialized categories can be encountered, such as *lex petrolia* (oil and gas), *lex informatica* (for information and communications technology) and, finally, *lex constructionis* (to cover the construction industry). Modified *lex mercatoria* principles are to become principles of such customary law.

There are opinions, according to which, it is necessary to modify *lex mercatoria* principles, because the construction industry has its specifics and the public interest often conflicts with business here. It is actually a *lex specialis* and *lex generalis* relationship. Some of the *lex constructionis* principles overlap with the legal systems and their equivalents tend to appear in both common law and European civil codes. Others come from customs that developed in the construction industry over extended periods of time. In other words, the standard forms of contract are based on these principles in the same way as these principles arise on the basis of the customs that are themselves coming into existence by virtue of using the standardized sample forms.

A common law of construction contracts – or vive la différence? by Donald Charrett (Australia)

Contract law (and therefore construction law) around the world are founded on two fundamental doctrines, operating within legal systems complying with the rule of law. The first of these, freedom of contract, sets the 'ground rules' which govern the parties' rights to enter into the contract of their choice. The second, the principle of *pacta sunt servanda*, governs the performance of a contract after it has been entered into.

A recent succinct statement of the principle of freedom of contract under the common law is: 'Subject to public policy and statute law, parties to a contract can agree to do anything.' For details, see *Abigroup Contractors Pty Ltd v Transfield Pty Ltd & Obayashi Corporation* [1998] VSC 103 [86] (Gillard J).

Freedom of contract is also a fundamental principle under civil law systems, e.g.: Art 1306 of the *Civil Code of the Philippines* states: 'The contracting parties may establish such stipulations, clauses, terms and conditions as they may deem convenient, provided they are not contrary to law, morals, good customs, public order or public policy.'

It is submitted that the freedom of parties to contract, subject to any constraints imposed by applicable statute law or public policy, is universally applicable across both common law and civil law systems. Both of these constraints vary from jurisdiction to jurisdiction, and construction law is therefore inevitably conditioned by the relevant jurisdiction. While it is usually possible for contracting parties to select the proper law of their contract, they have no choice over the jurisdiction of the site where the construction takes place, and any relevant statute law in that jurisdiction applicable to e.g. property, the environment or employment will apply. Further, the heads of public policy will vary from jurisdiction to jurisdiction.

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The obverse of the principle of freedom of contract is the doctrine of *pacta sunt servanda*: a fundamental principle of both domestic and international law that requires the provisions of agreements concluded properly to be observed. This means that once parties have exercised their freedom to enter into a contract, they have the legal rights and obligations they have agreed and are entitled to, and a court or an arbitrator will enforce them.

The universal nature of this principle has been stated as: 'All the world's legal systems focus on the sanctity of contracts, and damages as the remedy for breach of contract.' The consequences are important for the practice of construction law internationally: 'the vast majority of construction disputes are fought and won or lost primarily over the wording of the contract (and alleged facts)' (Knutson, 2005). The universality of this principle across legal families is clear from its application in Shari'a law: 'O you who believe! Fulfill your obligations.'

In recent years there has been significant convergence between the common law and civil law:

- The volume of legislation in common law countries has grown substantially: increasingly, more of the law is explicitly stated in legislation, which either codifies or amends the existing common law, or forms new 'social legislation' which mandates desirable community outcomes not achieved by the common law.
- The courts in civil law countries are relying to a much greater extent than previously on the precedential value of court judgments on a similar issue, because the answer to a legal issue may not be found in the codes (Jaeger and Hök, 2010).
- Despite the differences between legal theories, form, procedure and terminology, in many factual situations, the two systems will arrive at essentially the same substantive result.

Further, the influence of international arbitration in bridging common law and civil law should not be underestimated. In an international arbitration, one of the parties may be from a common law system while the other may be from a civil law jurisdiction. Different aspects of the contract and the project may be performed in a number of different jurisdictions. In a dispute determined by international arbitration, the arbitrators may not only be from different countries, but from different legal systems, and the arbitration may be held in a 'neutral' country, whose laws will govern procedural aspects of the arbitration. Inevitably in such cases, common ground in relation to legal principles must be established and is found between the potentially conflicting requirements.

In all jurisdictions, statute law related to construction contracts provides a significant constraint on the parties' freedom of contract (in addition to the common law in relevant jurisdictions). That statute law varies from jurisdiction to jurisdiction in many and various ways. Not surprisingly, there are differences in terminology and in legal principle that make it difficult to discern even broad principles of a common construction law. Nevertheless, the principles of freedom of contract and *pacta sunt servanda* form the basis of construction law around the world, and ensure that there is a thriving international construction industry. Construction contracts can be executed in the knowledge that, notwithstanding local law differences, there are appropriate methods of dispute resolution, broad agreement on what constitutes a just outcome in most situations, and international norms that ensure remedies can be realized.

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Contracting parties can use the principle of freedom of contract to move closer to a common construction law, particularly by the use of the *UNIDROIT Principles* as the governing law of the contract, in conjunction with construction contracts written for international use such as FIDIC. There is ample precedent for such an approach to be supported by international arbitration tribunals.

Perhaps the clearest pointer to what there is of a common construction law is the following statement on the fundamental importance of the words of the contract itself, vindicating the twin principles of freedom of contract and *pacta sunt servanda*: 'Finally, deep in the night, with no one else around, most lawyers in their heart of hearts will admit – the Contract usually decides the issues, despite what the law is' (Knutson, 2005).

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5.10 *Lex constructionis* principles

Besides the traditional ones, such as *pacta sunt servanda*, *rebus sic stantibus*, and *good faith protection*, there are several other principles that are typical to international construction contracts (Molineaux, 2013):

- Admissibility of 'directed variations' that do not constitute any breach of contract.
- The employer will bear a reasonable increase in the contract price when the employer provides the site and the contractor encounters, during the realization, worse conditions that those defined in the tender documents. The reverse is also true when better conditions than actually expected are encountered, therefore implying a reduced contract price.
- The risk of unforeseeable physical conditions being allocated to the employer in underground construction.
- Construction and related methods and processes will basically be up to the contractor who, as such, should be stimulated to choose effective solutions.
- Judge or arbitrator rights to moderate in matters of liquidated damages and the admissibility of limitation of liability. Only damage reasonably foreseeable by a reasonable person at the time of entering into the contract will be compensated.
- Damage compensation claims should be thoroughly scrutinized, but not refused because of the difficulty of documenting them. Often liability is clear, but quantum is difficult to prove as is the case in headquarters overhead claims quantification or global claims in the case of complex delay and disruption. In both common law and civil law countries, judges are usually allowed in such situations to decide the quantum at their sole discretion, considering alone what they perceive to be fair and equitable (*ex aequo et bono*).

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Proactivity and good faith protection relate to time for completion and admissibility of (directed) variation principles. This will be dealt with in more detail in Section 5.10.1.

5.10.1 Proactivity and good faith protection related to time for completion

It is said that 'time is money'. Nowhere else is this more true than in construction projects. Delays result in losses on the employer's side as investment returns (or public benefits) become more distant, the contract price increases and other adverse implications such as cash flow problems appear. If found responsible, the contractor may be sanctioned with a contractual penalty, liquidated damages, lost performance bonuses and an impaired reputation.

Some standard forms of contract force construction project participants to be proactive in their obligations to warn and notify any events that will affect time and price in advance, to notify claims under time bars, to submit updated time schedules (either on a regular basis or each time when a deviation from the last updated schedule appears).

When considering time for completion, variation instructions regarding extension of the scope of works, instructions to accelerate, or the negotiations and decisions in terms of extensions of time for completion, these issues should be resolved as soon as possible by the employer to avoid 'constructive acceleration claims'.

A situation may also arise where the employer fails to respond to a contractor's warning, notification or updated schedule. Here, the principle is that if the employer does not respond to a contractor's notice of claim for an extension of time for completion and fails to decide about the claim, then the time for completion is no longer of the essence. Known as 'time at large' in common law, the contract will be interpreted accordingly. The contractor shall then be obliged to complete the work within such period of time that is reasonable in respect of all the circumstances. In such a case, the employer will often point out the contractor's general duty to prevent damages to push the contractor to optimize the methods and sequencing of realization (regarding personnel, subcontractors, plants, deliveries, equipment, and so on) to avoid damages in the form of contract price increases.

The contractor will frequently see this situation as very complicated in terms of organization, financing and avoiding additional costs. Every day by which the realization of a large construction project is extended will usually cost huge amounts of money (overhead expenses, extensions to bank guarantees and insurance, real property rentals, machinery leases, and so on). The same applies to disruptions that may be caused for similar reasons. Proving causation in case of multiple disruptions is almost impossible and global claims are potentially unavoidable.

Logically, the party that is proactive (i.e. the one actively warning, notifying adverse events and respective effects on quality, time and price), being in good faith, has to be protected in a dispute. An 'early warning duty' is a contractual obligation that is being increasingly used in modern contracts to support proactivity. A traditional *vigilantibus, et non dormientibus, jura subveniunt* (the one heeding his rights is to be favoured) applies here, and *qui tacet consentir videtur* (silence or refusing to respond) should be considered in disfavour.

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5.10.2 Admissibility and necessity of variation procedures

A construction project is a set of interrelated activities that may sometimes give the impression of 'coordinated chaos'. Complications and problems are encountered in every project, often in the form of adverse climatic conditions, problematic ground conditions, accessibility issues and lack of foreseeability. A construction project is also dependent on human factors, unforeseeable conditions and phenomena, as well as other factors. Therefore, it is more than likely that a construction project will deviate from what the employer, designer or contractor planned before starting the works. Good contracts are prepared for such situations and contain, therefore, variation clauses with respective procedures devised to enable rapid resolution of problems encountered. Those variations are described as 'directed variations'. Such variations do not, of course, imply a breach of contract because the contract itself allows for them.

Contractual variation procedures should regulate how to propose, approve and instruct variations (and within what periods of time) and how to calculate and document them including the respective forms of variation orders, and so on.

If the variation procedures are set functionally and reasonably in a contract, they cannot be in conflict with law as they are a necessity. Variations are an inherent part of large construction projects and the admissibility and necessity of variation procedures are no doubt one of the key principles of *lex constructionis*.

5.11 The use of *lex constructionis*

There are views that the *lex mercatoria* (including its sub-groups, such as *lex constructionis*), are of no use in practice as a governing law for the purpose of choice of law. One of the main difficulties is a lack of consistency and completeness. However, it is usually clear from the international agreements and arbitration rules that the arbitrators, when finding a resolution, may apply the law they consider applicable. It is evident from published arbitration awards that the arbitrators make use of and apply *lex mercatoria* in practice. Given the use of *lex mercatoria*, it is of course always necessary to evaluate the risks concerning the enforceability of an arbitration award. The idea of International construction court is worth mentioning in connection with *lex constructionis*. Such a subject could be crucial in developing settled case law and interpretation of standard forms in construction. This can be critical in promoting commercial certainty. While there are differences in laws and practices across the globe, there is also notable commonality in the concepts and forms used by the construction industry (Menon, 2014).

The discussion of the principles of *lex mercatoria* in this chapter is demonstrative in its nature, and can serve as a guide, supporting both the decision-making of the construction project participants and the resolution of any disputes that may arise.

Future-proofing construction contracts by Shy Jackson (UK)

Construction technology in the twenty-first century is very sophisticated, using computer models, advanced materials and other techniques to construct bigger and taller buildings, bridges and tunnels. But how often do we see the same old disputes, where parties spend years arguing

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about events that happened even further away in the past? With the benefit of hindsight and knowing how these disputes start and develop, can we modernize construction procurement and contracts to help avoid such problems or are such dispute a permanent feature of all construction projects?

Construction contracts are of course being reviewed and updated regularly and some may say that this is enough. This may well be right but it is still worth spending some time in thinking whether it is possible to develop procurement procedures and contractual arrangements so that they can help ensure projects are successful.

A simple example is the growing use of building information modelling (BIM). Such systems have the potential to make real changes to how projects are managed, but they need to be anchored in the contractual framework in order to ensure there is clarity on the process and how risks and liabilities are divided when using such systems.

But there are other more fundamental changes that can be made. At one extreme, a default position is that the lowest bid wins, on the assumption that there will be a negotiation and possibly a dispute once the works are completed in order to determine the final amount due. That model will be familiar and some use it as the basis for projects, despite some obvious drawbacks. People do not tend to buy the cheapest car or house, and construction should be no different.

If new models are being explored, there are some issues that need to be considered. To start with, though contractors often tend to get the blame, it must be recognized that it is employers who drive projects. That means that employers need to understand the construction processes, the contractual framework and, crucially, the construction risks and how they are managed. Employers who do not have the necessary skills and experience will fail to manage works properly and are more likely to cause delays and cost increases.

This is a real issue in parts of the world where substantial infrastructure projects are managed by local authorities who have not been trained to manage large construction projects built by international contractors. A programme for educating and training the individuals who act as employers, to make them understand how a contract allocates risks and how time and money can change, will improve the overall performance in construction projects.

Another way to develop the understanding of employers is for them to work more closely with contractors at an early stage and discuss the proposed works before the contract is signed and the plans are fixed. There are of course issues in some countries regarding such pre-contract discussions due to procurement laws, but where it is possible to engage in such discussions, this is likely to result in a better understanding of the project, what risks there are and what can be done in advance to improve construction and limit risks. This will also help to reduce risk allowances which increase the price.

The employer drives the project but the contractor implements it. Both need to work together and anything which can help to create a better working relationship will ensure a successful project. One basic step is making sure that both the employer and the contractor's employees have copies of the contract and are familiar with its provisions and what it requires. Many disputes are the result of a party making a claim without first checking the position under the contract. Claims sometimes arise due to a simple failure to comply with notice or record-keeping provisions and disputes often are the result of failing to understand who has a specific risk under a contract.

A more fundamental question is whether the commercial interests of the employer and contractor can be aligned. All too often it is impossible to reconcile the employer's need to limit

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costs and delay (or create a landmark building) with the contractor's need to achieve an acceptable profit margin. This conflict is sometimes made worse by contract provisions which use financial penalties for poor performance but have no incentive for good performance. This approach is not always effective and a good example is liquidated damages clauses, which rarely compensate an employer in full for actual losses caused by delays. Bonuses for early completion are sometimes used and they can be much more effective in preventing delay than liquidated damages.

That principle can be used on a wider basis. In the UK, target cost contracts have become popular, where the employer and contractor share any savings if the final cost is below the agreed target but also share the cost overspend if the project ends above target. This means that there is a financial incentive for both parties to work together and find ways to reduce costs but also to manage risks. For example, if a contractor risk event occurs which will result in additional costs, the employer will share such cost (or have a reduced saving) which means the employer is interested in dealing with such issues instead of simply dismissing them as contractor risks. Similarly, a contractor is still keen to reduce the effects of employer risks rather than using them as a way to increase recovery.

Target cost contracts raise their own issues and the first challenge is agreeing a realistic target. Such contracts require parties to understand how the risk share mechanism works but when used correctly, there is a powerful incentive for parties to work together.

Another interesting question is whether parties should resolve disputes as they happen or resolve them once the works are completed. Disagreements as to the effect of a delaying cause, what is a defect or the cost of a variation, are part of a construction process and often there is genuine disagreement.

Dealing with all issues at the end of a project has the benefit of the participants being able to negotiate an overall and final settlement. Such an approach does mean that until the project is completed, there is uncertainty as to the final cost. This is of course an issue for both the employer, who needs to know if a budget will be exceeded, and a contractor, who needs to know if a project will result in a profit. Where banks fund projects, there is benefit in having a clear understanding of the ultimate project costs. In addition, leaving issues until completion often means that an opportunity to mitigate a loss is missed (since both parties deny liability) and relevant information is lost or forgotten, with both parties becoming entrenched in their position.

It is for that reason that the FIDIC form contains an adjudication provision and that the use of Dispute Resolution Boards is being encouraged. This is not the place to discuss whether decisions should be binding or just recommendations, but any decision by respected and authoritative individuals who know and understand the project is a fairly reliable indication of what the ultimate outcome is likely to be. This provides a better understanding of the potential final cost for all parties. Regarding adjudication as a process aimed at achieving certainty instead of a hostile situation may increase its use and may help to avoid major post-completion disputes.

In conclusion, it is worth exploring what can be done to ensure that the parties involved in construction projects have a better understanding of the contracts they use and how contracts can be structured to encourage the parties to work together on the basis of aligned commercial interests. There are, however, no all-embracing solutions and the characteristics of each

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project, and the parties involved, will need to be considered. But if the construction industry is improving and modernizing, there is no reason why contracts should not develop in the same way.

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6 Price

6.1 Contract price

The way that the contract price is established (especially in large construction projects) is problematic as adequate and clear guidelines are lacking in many countries. Undefined and ambiguous contractual terms tend to give rise to disputes.

Every construction contract should, above all, define sufficiently how the total contract price is to be created and what it should consist of. In many developing countries, the prices of products were formed artificially within a controlled economy. Prices were perceived as fixed and not influenced by market conditions, inflation, etc. This allowed governments to use fixed prices as indicators for directive planning and as an instrument to regulate public consumption.

Construction projects are typically long-term processes. In the preparation phase or at the beginning of the design or construction works, the participants have only limited knowledge of the potential risk. These risks are typically allocated to the parties by contract, or moved to third parties through insurance policies or securities. Other risks will be dealt with by way of a contractor's risk surcharge or employer's financial reserve. If there is no financial reserve in a project and risks are hard to foresee and treat, or the contractor is not able to cope with a loss, the project can be negatively affected and, eventually, prematurely terminated.

Very often, the employer does not have sufficient financial resources and needs a loan or subsidy. The employer has to negotiate the conditions of the loan or subsidy with lenders (mainly banks) or an authority that provides such a subsidy. Lenders and such authorities are then closely engaged in the particular project and supervise if the employer and the contractor are complying with the agreed conditions. Some of the most sensitive issues involve the actual compliance with grant conditions, how the contract price is calculated and the handling of variations and claims.

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6.1.1 Project finance

Sometimes what is called project finance is used as long-term financing of infrastructure and industrial projects. Project finance is based upon the projected cash flows of the project rather than the balance sheets of its sponsors. Usually, a project financing structure involves a number of equity investors known as sponsors as well as a syndicate of banks or other lending institutions that provide loans to the operation. These are most commonly non-recourse loans, which are secured by the project assets and paid entirely from the project cash flow, rather than from the general assets or creditworthiness of the project sponsors. Financing is typically secured by all the project assets, including revenue-producing contracts. Project lenders are given a lien on all of these assets and are able to assume control of a project if the project company has difficulties complying with the loan terms.

To satisfy the conditions established by the lenders (the subsidy providers) and to avoid disputes, the appropriate delivery method (including the method of total contract price determination and claim and variation management rules) must be chosen and described in full in the contract.

The contract price is usually one of the employer's priorities. The lowest price is often the only criterion in public procurement and, for this reason, the contract price frequently becomes a political issue. On the other hand, large construction projects are inherently prone to cost overruns.

6.2 Bid pricing methods

To understand the limits of the foreseeability of the total contract price it is important to know how the bids are priced. Pricing methods may vary, depending on the practices used within a particular company. The pricing method which enjoys the widest use is based on a determined unit cost which is then increased by a percentage margin.

The bid price is usually the total sum of the direct costs of equipment, material and labour, site overheads, headquarters overheads, risk and profit surcharge. On the other hand, a claim for additional payment rests only on the documented direct costs plus overheads and profit surcharge. Another method of claim quantification is to use a methodology for variation evaluation, i.e. the rates and prices of a bill of quantities of a particular contract or a similar contract, industry standards or a new calculation for a particular rate or price. The position of the SCL Protocol on the relevance of tender allowances is that the tender allowances have limited relevance for the evaluation of the costs of prolongation and disruption caused by breach of contract or any other cause that requires the evaluation of additional costs.

To illustrate the pricing methods, let's take a particular product like a bridge. Once again, a problem appears in the uniqueness of such a bridge as a product because every construction project is unique in its own way. The designer, employer, on-site physical conditions, risks and the like are always different. This is why there cannot be any all-embracing, unified bridge pricing methodology.

Having received and considered the tender documentation and bill of quantities, the contractor will determine what items of work (moving earth, bearing structures

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and the like) they are able to construct by their own means and what other items of work (such as special foundations and formwork) the contractor will have to provide through subcontractors. With this decision made, the contractor will contact the subcontractors for their price quotations.

The items in the former group are subject to internal estimates. A budget is prepared for every individual item which covers the necessary materials complete with shipment, labour costs and a time schedule. All items are then assigned a respective 'weight' based on their nature, knowledge of the design, the manufacturing processes and other methods used in general. Regardless of whether internally estimated or received from subcontractors, these costs are identified as direct costs.

Site and headquarters overheads constitute other components of the price. The wages of the project teams (the project manager and their team, the site manager and their team), project team personnel expenses such as for transport, communication, training, and so on are included in the site overheads. The site overheads further cover flat, office and land rentals, cleaning, IT costs, power and water supply costs, and site facilities (including their set-up, removal and maintenance, such as traffic ways, fences, traffic signs and on-site security guards).

Headquarters overheads contain a percentage surcharge covering the cost of contractor headquarters.

The last component of the price consists of the risk surcharge and profit. Overhead items, risk surcharges and profit are usually not subject to any separate item in the bill of quantities and the contractor must add them to the other items that are already defined.

Another major distinction to be drawn in connection with pricing and subsequent submission of claims may be the one between fixed and variable costs. Fixed costs are costs which are not directly dependent on production volumes and remain constant. Variable costs, on the other hand, rise and fall with production volumes.

Within a construction project, production volume depends on the time necessary for completion of the work. Variable costs grow with extensions of time, making it more expensive to run site facilities. However, the price of setting up and removing them remains the same (i.e. fixed) as they are one-time processes. As a part of variable costs, the price of works performance bank guarantees and any insurance must also be extended. Therefore, addendums to original contracts will also grow in response to an extension of time for completion.

The contractor may also submit what are called cover bids. The reasons behind submitting cover bids vary and can include motives such as not wanting to disappoint the employer, maintaining good relationships with other contractors, and so on.

A particular cycle in a market economy also plays a role in valuation. For instance, the risk surcharge is often left out in recessions with the priority being to maintain contractor turnover. Therefore, market economy cycles and project risks are important factors affecting valuation.

Cash flow can play a role as well. Many large construction projects last for a number of years so the contractor may charge higher prices for some items of work to be carried out in the later stages of the project, for example, to adjust for inflation or to incur a loss by the end of the first year of construction for accounting or tax reasons. Another factor may be the contractor speculating on the valuation of items

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in relation to known errors in the employer's basic design or foreseeable, necessary variations.

6.3 Methods of contract price determination

The following contract price determination criteria can be distinguished:

- economic influences (fixed or variable price);
- formation of the 'total price', i.e. mainly the content of total price and how the total price is calculated (lump price, re-measurement and cost plus).

6.3.1 Economic influences on the contract price

Unlike variable price, the fixed price does not undergo any adjustments due to inflation, deflation, depreciation, changes in exchange rates, interest rates, economic cycle development trends or to changes in costs in a particular market. Concerning the variable price, individual criteria have to be set out in the contract to allow for adjustments. For example, the FIDIC forms contain Sub-Clause 13.8, Adjustments for changes in cost which reads:

> If this Sub-Clause applies, the amounts payable to the contractor shall be adjusted for rises or falls in the cost of labour, goods and other inputs to the Works, by the addition or deduction of the amounts determined by the formulae prescribed in this Sub-Clause. To the extent that full compensation for any rise or fall in costs is not covered by the provisions of this or other clauses, the accepted contract amount shall be deemed to have included amounts to cover the contingency of other rises and falls in costs.

6.3.2 Formation of total contract price

The total contract price is calculated on the basis of re-measurement, lump sum price or the cost plus method. It should be emphasized that these terms are often used inconsistently. Therefore, it is always necessary to define and describe the contract price determination method as precisely as possible in the contract. The above-mentioned basic types of pricing methods can be used in various combinations and with different components to limit (maximum price) or motivate (target price). Larger projects may adopt a combination of the above-mentioned methods including different payment arrangements.

6.4 Re-measurement

Using the re-measurement method (the measured or unit price contract), the works actually done are measured based on the individual rates and prices offered by the contractor in their bid in the bill of quantities (prepared by the employer). The bill

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of quantities contains particular items and gives a brief description of the work and quantity. Every individual item and the respective rate or price must be properly contemplated and its content clearly understood to avoid disputes. The contractor will evaluate the rates and prices in the bill of quantities while keeping in mind prices for the materials, products, labour, equipment, plants, and so on (e.g. per cubic metre cost of the pit to be excavated). This process is called estimating and affords a means for the employer of comparing tenders received once they have been priced.

It was mentioned that sometimes estimates are not accurate and they may differ significantly from the actual price. This is especially true where prices have been taken over from past contracts. Works that are specific to the project such as pit excavation, for example, depend on things like subsoil, local hydrogeology and distance to temporary deposits which may be difficult to estimate accurately.

Next to the continuing re-measurement of the works, the contract price is also formed via claims, variations and adjustments based on the particular contractual risk allocation, claims options and variation (and adjustments) procedure.

6.4.1 Methods of measurement

Methods of measurement are standardized processes that facilitate measurement and valuation. Standard methods of measurement specify how virtually all commonly encountered construction activities are to be measured. An example is the *Civil Engineering Standard Method of Measurement* (CESMM) developed by the Institution of Civil Engineers (ICE). The purpose of CESMM is to set out the procedure by which a bill of quantities should be prepared and priced and the quantities of work expressed and measured. The latest edition (4th edition) was published in 2012. Another example is the *Standard Method of Measurement* (SMM) published by the Royal Institute of Chartered Surveyors (RICS) in 1988. The SMM is now in its seventh edition (SMM7) and was published in 1998. SMM7 provides detailed information, classification tables and rules to create a uniform basis for measuring building works, in order to facilitate industry-wide consistency and benchmarking, to encourage the adoption of best practice and to help avoid disputes.

Re-measurement contracts without an agreed method of measurement are prone to disputes.

6.4.2 Provisional sum

Bill of quantities may contain various types of items and amounts serving different purposes. Their description and content depend mainly on the contract and the method of measurement used. One such item is the provisional sum. In construction contracts, a provisional sum may have various meanings, but usually it is the sum referred to as a provisional sum in the bill of quantities. The provisional sum is used for the payment of works or services for which the total price is difficult to foresee or there is some uncertainty as to whether the works or services will be performed at all. This is different from the contingency (the employer's financial reserve) used

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to cover the financial consequences of either known or unknown hazards or their respective risks that are not insured or secured. Contingency should be subject to confidentiality.

Under Sub-Clause 1.1.4.10 of the FIDIC CONS/1999 Red Book Provisional Sum means 'a sum (if any) which is specified in the Contract as a provisional sum, for the execution of any part of the Works or for the supply of Plant, Materials or services under Sub-Clause 13.5 [Provisional Sums]'.

Sub-Clause 13.5 further reads:

> Each Provisional Sum shall only be used, in whole or in part, in accordance with the Engineer's instructions, and the Contract Price shall be adjusted accordingly. The total sum paid to the Contractor shall include only such amounts, for the work, supplies or services to which the Provisional Sum relates, as the Engineer shall have instructed. For each Provisional Sum, the Engineer may instruct: (a) work to be executed (including Plant, Materials or services to be supplied) by the Contractor and valued under Sub-Clause 13.3 [Variation Procedure]; and/or (b) Plant, Materials or services to be purchased by the Contractor, from a nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]) or otherwise; and for which there shall be included in the Contract Price: (i) the actual amounts paid (or due to be paid) by the Contractor, and (ii) a sum for overhead charges and profit, calculated as a percentage of these actual amounts by applying the relevant percentage rate (if any) stated in the appropriate Schedule. If there is no such rate, the percentage rate stated in the Appendix to Tender shall be applied. The Contractor shall, when required by the Engineer, produce quotations, invoices, vouchers and accounts or receipts in substantiation.

Provisional sums under FIDIC forms are the amounts set out separately by the employer in the budget. These amounts are intended to cover particular works or services where the employer is unsure if they will be used or if the quantity or other attributes of them could not have been exactly known prior to commencement of construction. Such sums can be used for those particular items only.

These works or services are only performed after the instruction of the engineer. The quantity is to be measured and the employer will pay for the works actually done, either within a variation procedure as per Sub-Clause 13.3 or on the cost plus basis. As mentioned above, the provisional sum may have a different meaning in construction than under FIDIC.

A provisional lump sum may be encountered by project participants. This is a firm price for part of the works, with provisional rates to apply to a series of contingencies. For example, a range of potential ground conditions could be separately priced and the rates would simply be applied to match the conditions actually encountered. The employer then knows the 'worst case scenario', but will benefit from paying the lower rates if the conditions encountered prove to be straightforward. A provisional lump sum also mitigates potential problems where the design is defined by reference to open-ended or general criteria by allowing alternative design solutions to be priced (Jenkins and Stebbings, 2006).

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6.4.3 Options

In the context of procurement law, an option is a right of the employer to purchase products or services on terms and conditions determined in advance which the contractor is obliged to perform on the pre-agreed terms stipulated. Exercise of an option does not constitute a change of the contract but a change pursuant to the contract (directed variation), provided that: (1) the option is sufficiently clear in its description; (2) that the tender contains the price of the option so that the employer may take the option into account, directly or indirectly when awarding the contract; and (3) that the option may be exercised without prior negotiation between the parties. Options also have the commercial advantage of maintaining a fixed lump sum price in competition, i.e. during the tender stage where the contractor fought to win the contract, as compared to changes agreed upon subsequently where the employer often has no alternative but to pay the price asked by the contractor (Hartlev and Liljenbøl, 2013).

6.5 The lump sum

Under the lump sum method, a pre-agreed sum (regardless of actual cost incurred) is paid by the employer and the works actually done are not measured but paid against the schedule of payments, mostly once the predetermined sections (or milestones) are finished or when the project is fully completed. The lump sum price is also influenced by claims, variations and adjustments based on the particular contractual risk allocation, claims options and variation (and adjustments) procedure.

The lump sum should be sufficient to cover the anticipated costs, overhead, profit and risk surcharge. The main advantage for the employer is cost certainty and simpler contract administration. This advantage is lost where the surcharge is too high and where the risks of a particular project are hard to quantify. Disputes arise in such circumstances where varied or additional works and claims in a lump sum contract are not solved by pre-defined rules or with a common-sense and fair approach of all participants involved.

An alternative called "detailed lump sum contract" is sometimes encountered for example in Germany. Some authors speak about a "system choice" that is to be made by the employer in this regard. If the employer has decided for the lump sum contract "system" with such detailed description of the contractual services, the contractor need only execute the services which are described in detail under the agreed lump sum. An employer attempt to evade this by adding a completeness clause to the "detailed lump sum contract" would be seen as invalid in Germany (Kus, Markus and Steding, 1999).

6.6 Cost plus

Under the cost plus method, the contractor receives from the employer not only the payment for reasonable and properly incurred cost, but also a fee for overhead and profit. This method is more appropriate for high risk projects where a lump sum

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price (which takes all contingencies into account) would be too high. To encourage the contractor to perform the works for the lowest possible price, some additional mechanisms can be used, for example, the maximum guaranteed price or target price, described below.

Under this arrangement, contractors are usually obliged to maintain comprehensive and contemporary cost records and the employer usually reserves the right to audit the claimed cost to ensure they have been reasonably and properly incurred. The profit and overhead surcharge will be subject to competition in the tender period.

It was already mentioned that the cost plus method is often used for contractual claims quantification. Thus, if the contractor suffers delay or incurs cost under 1999 FIDIC forms in case of employer risk event, they are entitled to a payment of any such cost (including overhead) plus reasonable profit in some situations. Under Sub-Clause 1.1.4.3 'cost' means all expenditure reasonably incurred (or to be incurred) by the contractor, whether on- or off-site, including overhead and similar charges, but does not include profit. Profit is allowed only in specific claims, i.e. usually those where there is an employer default.

The cost plus price is also influenced by claims, variations and adjustments based on the particular contractual risk allocation, claims options and variation (and adjustments) procedure.

6.7 Guaranteed maximum price

Employers sometimes want to cap the total contract price using the guaranteed maximum price to allocate all risks of potential price increases to the contractor. This approach is used mainly in the USA using the construction management at risk delivery method. The main drawback of such a system is that it must be perfectly thought out in respect of risk allocation, insurance, securities and financial reserves (or risk surcharges). Such a set-up is not appropriate for projects where numerous hazards with major risks are pending and it is not possible to price such risks transparently.

This method usually involves a two-stage procurement process. The first stage includes a preliminary investigation, a feasibility study and outline design. The second stage is the development of the design and project construction. The first stage of the project is paid for on a cost plus basis. The contract then 'converts' to a guaranteed maximum price once the scope and definition of the works become more certain. The employer retains the option not to continue with the project at all after the first stage if the guaranteed maximum price is prohibitively high or to discontinue cooperation with the contractor and tender the job anew on the basis of the completed preliminary design (Jenkins and Stebbings, 2006).

6.8 Target price

One of the biggest challenges in every project is achieving an environment where both parties collaborate together and have a common commercial interest. It is

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therefore efficient to design contractual mechanisms which provide a commercial incentive for the parties to communicate and collaborate in ensuring that the project is a success.

One such mechanism is a target cost contract. As part of the contract negotiations, the parties agree a target price based on their knowledge of the project conditions and their assessment of potential risks. The works then begin and during the works two things happen in parallel:

- The contractor is generally paid their actual costs (less disallowed costs if they are defined) plus a fee on a regular basis (usually every four weeks).
- The initial target price is adjusted during the works in accordance with claims and variations (compensation events) and their estimated cost.

On completion, these two elements are compared. If there is a saving or a cost increase as against the target, then the parties share such savings or cost increases in the agreed proportions set out when the contract was agreed. This is regarded as an incentive to efficient contract management because both parties share the risks (to varying degrees) and they both have an incentive to reduce the actual cost, so that a gain share is increased or a pain share is limited. Contractual mechanisms such as the early warning notices and the accepted programme are designed to ensure that the contract operates on an open basis and both parties can take the initiative in seeking to reduce costs. For example, if there is a cost increase to specified materials, this is a contractor risk but it may result in the employer sharing a lower saving or sharing a cost increase. The employer is therefore motivated to discuss with the contractor how to reduce the impact of such an issue, for example, by looking to use other materials instead.

Target cost contracts can therefore be highly effective in motivating parties to cooperate and to increase their gain share or reduce a pain share. For that to happen, however, the parties must understand the key elements that form the basis of the contract.

It is crucial to agree on a target price at the appropriate level, so that it is a realistic and achievable target. If the target is set either too high or too low, the incentive mechanism is unlikely to operate as intended. By way of example, if the target is set too low, there will almost certainly be an automatic pain share which has the potential to disturb the commercial balance, especially where the pain share is not on a fixed 50% basis. One of the ways of ensuring that the correct target is fixed is by engaging early contractor involvement and, where appropriate, pre-construction services agreements.

6.9 Payment

It is often said that cash is the 'blood' of the project. Without an appropriate cash flow, the contractor is not able to perform and construction projects end in trouble. This is the reason why some system of interval payment is required. On the other hand, the employer needs to ensure that they obtain value for their payments and the contractor remains motivated to finish the works in accordance with the contract. Various forms of interim payments are available in different combinations. The most common are progress or milestone payments.

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6.9.1 Progress payments

The majority of construction contracts are based on progress payments payable on a monthly basis. The amount due to the contractor reflects the actual progress of the works recorded in an interim certificate issued by the certifier (usually the contract administrator).

With re-measurement contracts, the actual works done are usually measured by the engineer on a monthly basis against particular rates and prices in the bill of quantities.

With lump sum contracts, the schedule of payments is usually for the payment of instalments of the lump sum. Sometimes, even with lump sum contracts, employers do not want to lose control in terms of the works actually done and require the contractor to submit a bill of quantities shortly before invoicing starts to allow the re-measurement for the purpose of the payment of the lump sum instalments in an appropriate monthly proportion. A situation may arise close to the end of the project when the lump sum has already been absorbed and the works are not finished. In such cases, it is the risk of the contractor to pay for the rest of the works to be completed. On the other hand, a situation may also arise when the works are finished and the lump sum is not paid out. In the latter, the unpaid portion of the lump sum becomes a profit to the contractor.

6.9.2 Milestone payments

Some construction contracts provide for payments to contractors upon achievement of milestones throughout the construction period. Milestones are set against the completion of certain activities or a section of work and, upon completing those works or that section, the contractor is paid for the works/section. Milestones are often incorporated into the time schedule (programme). This type of payment gives the contractor an incentive to complete works on time and in accordance with the time schedule (Jenkins and Stebbings, 2006).

Taxation in international construction contracts by Alex Blomfield (UK)

Each international construction contract will require specialist taxation advice from tax advisers in the country of the project. For the sake of certainty, the employer and its lenders will prefer as much as possible for the contractor to include relevant taxes in its price and acknowledge that the contract price includes all taxes applicable under relevant laws to any payment related to the execution and completion of the works or the contract. If the contractor has difficulty conducting proper due diligence on such taxes or if there exists a compelling reason for the employer to take a certain tax risk, then in limited circumstances the employer may agree to retain responsibility for certain taxes such as value-added tax, import taxes and duties and withholding tax.

While, for example, international hydropower construction contracts generally allocate most taxes to the contractor, the employer generally retains change in tax risk. This usually manifests itself through the change in law clause pursuant to which the contract price shall be adjusted to take account of any increase or decrease in cost resulting from a change in the laws or taxes of the country of the hydropower project (including the introduction of new laws and the repeal or

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modification of existing laws) or in the judicial or official governmental interpretation of such laws or taxes made after an agreed base date, which affect the contractor in the performance of obligations under the contract.

In an international hydropower context, the issue of withholding tax has most potential effect on the electro-mechanical contract. Offshore payments for services attract withholding taxes in many jurisdictions. This often drives the split of the electro-mechanical contract into offshore and onshore contracts, with a coordination wrap agreement, or at least separate onshore and offshore scopes. Under this approach an employer: (1) will pay no withholding tax on payments under the onshore electro-mechanical contract; and (2) will pay withholding tax only on the value of services provided under the offshore electro-mechanical contract. Structuring contracts in the most tax-efficient way always requires specialist tax advice from at least the jurisdiction in which the project is situated, if not also other jurisdictions as well.

Standard forms, such as FIDIC, contain no tax clause. An example bespoke-drafted tax clause for an international hydropower construction contract based on the FIDIC form follows.

Taxes

'*Taxes*' means any present or future taxes, levies, rates, duties, deductions, fees, withholding obligations, value added taxes, imposts (including importation of plant and materials) and other charges of a similar nature levied by any governmental authority, including authorities of the country, and all penalties, fines, surcharges, interest or other payments on or in respect thereof, that may be imposed on or in connection with contractor's obligations with the performance of this contract, and '*tax*' shall be construed accordingly.

The contractor shall pay, and acknowledges that the contract price includes, all taxes applicable to any payment related to the works or the contract. In addition, the following conditions apply.

(a) If any withholding taxes apply, related to the payments to the contractor of amounts due under the contract, then the employer shall deduct such withholding taxes from such payment and remit the balance of such payment to the contractor without a gross-up; provided, however, that the employer shall promptly reimburse to the contractor, together with interest thereon at the default interest rate, any withholding tax wrongly deducted.
(b) If any laws require the contractor to make a deduction or withholding from any payment to a subcontractor or any other party, then the contractor shall have the sole responsibility before the tax authorities of the country for any withholding or deduction that such laws require it to make with respect to such payment, in accordance with tax laws of the country. The contractor shall have no right to any reimbursement or indemnification from the employer for any unpaid withholding tax, deduction or fine imposed on the contractor by such tax authorities of the country with respect to payments it has made to subcontractors or any other party, domiciled outside of the country.
(c) The contract Price shall exclude import taxes and duties and value-added tax.
(d) The contractor shall bear all travel and lodging costs and expenses incurred by the contractor's employees.

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(e) The contractor shall self-assess, and withhold, all Taxes that may correspond to its employees, agents or representatives as a consequence of the subscription, fulfilment and execution of their obligations under the contract. The contractor shall be solely responsible before the tax authorities of the country for any withholding or deduction applicable to the remuneration paid to its employees. The contractor shall not be entitled to any reimbursement or indemnification from the employer for any unpaid withholding tax, deduction or fine imposed on the contractor by the tax authorities of the country with respect to remuneration paid to its employees.
(f) The contractor shall provide supporting documentation and issue the corresponding invoice indicating the services provided, the applicable period, the determination of the compensation, as well as any other additional information requested by the employer.
(g) The contractor shall include in the determination of customs value of the imported goods, the value of engineering, development, artwork, design work and plans and sketches undertaken elsewhere than in the country of importation and necessary for their production jointly with material, components, parts, tools, dies, moulds and similar items incorporated, used or consumed in the production of the imported goods.
(h) The contractor acknowledges that customs value shall not include charges for construction, erection, assembly, maintenance or technical assistance, undertaken after importation on imported goods such as plant, machinery or equipment, the cost of transport after importation and duties and taxes of the country of importation. To this effect, these items will be distinguished from the price actually paid or payable for the imported goods.
(i) The contractor acknowledges that the accepted contract Amount includes any royalties or licence fees related to the works, which the contractor shall pay, either directly or indirectly.

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6.10 Contract price under FIDIC forms

Concerning economic influences, FIDIC forms contain provisions at Sub-Clause 13.7 (Adjustments for Changes in Legislation) and at Sub-Clause 13.8 (Adjustments for Changes in Cost). Sub-Clause 13.7 foresees adjustments to take account of any increase in cost resulting from a change in laws (including changes to interpretation). Sub-Clause 13.8 foresees adjustments for the rise or fall in costs of labour, goods and other inputs, by the addition or deduction of the amounts determined by formulae that form a part of the contract.

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In respect of the formation of the total contract price, FIDIC CONS/1999 Red Book are the conditions of contract suitable for the general contracting (design-bid-build) delivery method. Therefore, logically, it is a re-measurement contract that distinguishes between:

(a) The amount the employer has accepted in their letter of acceptance regarding the contractor's bid (Sub-Clause 1.1.4.1); being, therefore, an accepted tender price which is in fact a forecast of the contract price. According to Sub-Clause 1.1.4.1, the accepted contract amount means 'the amount accepted in the letter of acceptance for the execution and completion of the Works and the remedying of any defects'.

    As stipulated in Sub-Clause 14.1: 'Any quantities which may be set out in the Bill of Quantities or other Schedule are estimated quantities and are not to be taken as the actual and correct quantities: (i) of the Works which the Contractor is required to execute, or (ii) for the purposes of Clause 12 [Measurement and Evaluation].'

(b) Total contract price (Sub-Clause 1.1.4.2) defined in Sub-Clauses 14.1, 12.1, and 12.3 is to be determined by measuring works actually carried out and to be adjusted as stipulated in the contract, with all the amounts in the bill of quantities (part of tender documentation) being the estimated amounts. This is therefore an agreed price as after completion. The contractor shall base their invoices on the amounts of works carried out and certified by the engineer during a certain (such as monthly) period of time. According to Sub-Clause 1.1.4.2, contract price means 'the price defined in Sub-Clause 14.1 [The contract price], and includes adjustments in accordance with the Contract.

Chapter 12 contains details of re-measurement in FIDIC CONS/1999 Red book. Otherwise, P&DB/1999 Yellow Book and EPC/1999 Silver Book both lack Chapter 12 equivalents.

According to the P&DB, Sub-Clause 14.1:

> The Contract Price shall be the lump sum Accepted Contract Amount and be subject to adjustments in accordance with the Contract … however, if any part of the Works is to be paid according to quantity supplied or work done, the provisions for measurement and evaluation shall be as stated in the Particular Conditions.

According to EPC Sub-Clause 14.1 'payment for the Works shall be made on the basis of the lump sum Contract Price, subject to adjustments in accordance with the Contract'. Payments (being instalments of the lump sum) are based on a schedule of payments (agreed contractually) to reflect the costs foreseen over time. The employer bears no risk of changes in volumes of the individual items in the bill of quantities. In respect of the formation of the total price, it is therefore a lump sum price. Such an arrangement is typical for design-build (DB) contracts.

FIDIC also makes use of the cost plus method, for example, under 'provisional sums – daywork' (Sub-Clause 13.6) and in contractual claim quantification. As per FIDIC CONS/1999 Red Book, P&DB/1999 Yellow Book and EPC/1999 Silver Book, the claims are a form of foreseeable (but not yet clarified) component of the total contract price.

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6.11 Cost overruns

Particularly large construction projects are prone to cost overruns. Sometimes it is difficult to foresee the overall cost because of the specifics of such projects. In some cases even the use of advanced technology can cause many complications. The influence of local politicians cannot be underestimated either. For example, cost forecasts can be deformed to get expensive projects started and many variations instructed that lead to time extensions and additional cost. Unrealistic terms may lead to work being done in haste which can cause further failures and additional cost.

A cost overrun is an unexpected cost incurred in excess of a budgeted amount due to an underestimation of the actual cost during budgeting. Cost overrun should be distinguished from cost escalation, which is used to express an anticipated increase in a budgeted cost due to factors such as inflation.

- The Suez Canal cost 20 times more than its earliest estimates. The Sydney Opera House cost 15 times more than was originally projected and the Concorde supersonic aeroplane cost 12 times more than predicted. Some more recent examples are as follows:
- The Channel Tunnel: a 50.5 kilometre-long (31.4 miles) undersea rail tunnel linking the United Kingdom with France. The tunnel was a build-own-operate-transfer (BOOT) project with a concession. Privately financed, the total investment costs at 1985 prices were £2.6 billion. At completion in 1994, actual costs were, in 1985 prices, £4.65 billion (i.e. an 80% cost overrun). The cost overrun was partly due to enhanced safety, security and environmental demands. Financing costs were 140% higher than forecast.
- The Willy Brandt International Airport in Berlin; a project that has suffered significant extensions of time for completion and cost overruns. In 2006, costs were estimated at €2 billion. After four delays, this figure had increased to €4.4 billion. Many of those costs corresponded to the cost of maintenance of almost completed work. Thousands of failures were also encountered and technology was so advanced that the technicians could not figure out how to use it. Rumours also abound that politicians get these expensive projects started artificially by calculating down the real costs to get permission from parliament or other committees in charge. In addition to that, politicians at the city, state and federal levels then often come with extra demands once construction is underway, which lead to expensive modifications. In the case of the Berlin Airport, it is said that approximately 300 ad hoc variation requests were ordered by politicians which created an explosion of costs and several delays. One of these was a last-minute wish to expand the terminal to include a shopping mall.
- Hamburg's concert hall should have been opened in 2010. The project started in 2006 and in 2005 estimated costs were €186 million. The project is currently scheduled to finish in 2017, at a total cost of €800 million.
- Construction of Cologne's North–South subway line began in 2004. After cost overruns and a collapse that killed two people in 2009, officials say the entire line may not be open until 2019. Costs have soared from €780 million to €1.08 billion.

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- In Leipzig, the city tunnel for commuter trains was expected to open in 2009. Construction has still not finished, and costs have jumped from €572 million to €960 million.
- Another recent example is the Panama Canal expansion project that is intended to double the capacity of the Panama Canal by 2015. The plan is to create a new lane for traffic, thereby allowing more and larger ships to transit. In 2006, the estimated cost was US$5.25 billion. The largest cost associated with constructing the project are the two new locks on the Atlantic and Pacific sides. Each is estimated to cost US$1.11 billion and US$1.03 billion respectively, plus a US$590 million provision for possible contingencies during their construction. In 2013, the Spanish company Sacyr Vallehermoso, which leads the multinational consortium expanding the waterway, said it would halt work in 21 days if the Panama Canal Authority does not cover $1.6 billion in cost overruns.

Other projects prone to notorious cost overruns are the Olympics. From 1960 to 2012 the following cost overruns were encountered for the Olympic Games:

London 2012, UK	101%
Atlanta 1996, USA	147%
Lillehammer 1994, Norway	277%
Barcelona 1992, Spain	417%
Albertville 1992, France	135%
Sarajevo 1984, Yugoslavia	173%
Lake Placid 1980, USA	321%
Montreal 1976, Canada	796%
Grenoble 1968, France	201%

The Olympics stand out in two distinct ways compared to other megaprojects: (1) the Olympics overrun with 100% consistency. No other type of megaproject is this consistent regarding cost overrun. Other project types are typically on budget from time to time, but not the Olympics. (2) With an average cost overrun in real terms of 179% – and 324% in nominal terms – overruns in the Olympics have historically been significantly larger than for other types of megaprojects (Flyvbjerg and Stewart, 2012).

6.12 Abnormally low tender (ALT)

Seen mainly in public tenders, abnormally low tender (ALT) prices have caused enormous problems to the construction industry in many different countries. Clark (2013) explains that the issue of abnormally low tender prices has, in a number of cases, had a major impact on the successful implementation of bank-financed projects in the public sector and frequently result in:

- the creation of an adversarial relationship between the employer and the contractor (and its sub-contractors);
- a significant number of variations orders and contractor claims which can be very burdensome for employers, their consultants and lenders to review and process;

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- cost and time overruns (as a result of the above);
- slow disbursement of loan proceeds (increasing the cost of the loan to the borrower);
- costly referral of issues to the dispute adjudication board (DAB);
- termination of contracts sometimes resulting in costly and time-consuming arbitration;
- last but not least, delays in procurement process (particularly tender evaluation).

In the majority of cases, an abnormally low tender price is a significant risk in construction projects. If the tender documents are not well prepared, the risks of contractors gambling, claims arising and increased final project costs will definitely be higher than usual.

There may be a number of different reasons for abnormally low tenders being given by contractors. These may include errors in tender documents or bids (wrong assessment of costs and risks), survival strategy, expectation of compensation through future claims, entering a new market, keeping competitors apart, preventing resources becoming idle, a hidden agenda to modify the design, and so on.

To avoid construction projects being threatened by the consequences of abnormally low tender prices, the following measures should be taken:

- The project must be well prepared and the tender documentation must be as precise as possible.
- Contracts must contain precise review (variation) clauses corresponding to the delivery method used.
- There must be adequate time for preparation of tenders.
- Experts on evaluation committees must be impartial and independent.
- Proper qualitative selection criteria related to the financial situation of the contractor must be applied.
- The MEAT (most economically advantageous tender) criterion must be used.
- Specific independent administrative bodies may be established to expeditiously solve the questions and requests during the tender process.
- Performance securities to cover bid, performance and payment may be used.
- Abnormally low tender prices must be evaluated and requested by the employer and, if the reason for their use is not justified, they must be excluded.

6.13 Claims as part of contract price

Contract price is (next to re-measurement, instalments of lump sum or payments of cost in cost plus method) formed via claims, variations and adjustments based on the particular contractual risk allocation, claims options and variation (and adjustments) procedure.

In case of a dispute it may be important to analyse if a particular claim is a component of the contract price or a mutual compensation for damages. This may be important in the evaluation of a possible lapse of claim under governing law.

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6.13.1 Limitation and prescription periods for claims

Governing law usually contains a limitation (prescription) period that does not allow the aggrieved party to claim damages after such period expires. So when does this period start to run? The answer will usually be found in the contract or governing law. However, there are differing options and legal opinions on this issue. For example, does the period start to run when the damage occurs or when the damage stopped accruing, in the case of an event with continuing effect? What about if the contract administrator (or the employer) does not allow the processing of payments (of works done or a claim)? If the particular claim or its component is not seen as compensation for damages but as a part of contract price determination, the period could start to run when it was first possible to invoice the amount or after the final statement (or discharge) was submitted.

6.14 Public procurement law limitations

Employers and contractors regularly wish to modify existing contracts awarded on the basis of a public tender. For public employers, however, the principle of freedom of contract is usually limited because they are subject to a competitive procurement procedure in compliance with the principles of transparency and equal treatment. This may lead to a need of a new tender procedure connected to the performance of a particular, already running project. Employers may be in doubt as to whether a modification requires a new tender procedure and, in such situations, they may choose not to modify the contract. From a socio-economic perspective, however, it is hardly desirable if the employer (for fear of breaching procurement rules) continues to perform a project that does not completely fulfil their requirements (Hartlev and Liljenbøl, 2013).

It follows from the settled case law of the Court of Justice of the European Union (CJEU) that procurement rules (including principles of equal treatment and transparency) apply even after the conclusion of the contract. These principles set boundaries to the modifications which the contracting employer may make to an existing contract. If the modifications are substantial, a new contract award procedure is required. Modifications that are not substantial may be agreed upon without the requirement of a new contract award. It may be a difficult task in practice to evaluate if the modification is substantive or not. Public procurement law in the EU allows the use of negotiated procedure with respect to changes of existing public contracts and contains several exemption provisions which, if the conditions for their application are met, allow the employer to avoid publication of a contract notice and make a new call for competition. Instead, if they can agree on the terms, the employer and the contractor may agree to modify an existing contract. In other words, the change can take place by way of direct negotiations between the parties. However, in practice, it is very difficult to fulfil the conditions of the negotiated procedure. Even then, the employer is not permitted to agree with a contractor to modify a contract subject to the procurement rules without proceeding with a new call for tenders, if the change is substantial (Hartlev and Liljenbøl, 2013).

In order to provide flexibility in the period from signature until the end of the contract, the employer is advised (in the tender documents at tender stage), to refer to

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the possibility of subsequent changes so that any changes can take place in pursuance of the contract (and not as a change of the contract) via 'directed variations'. Such variation clauses (sometimes called 'review clauses') may, to a certain degree, ensure flexibility in the terms of the agreement (see Chapter 8). However, such clauses cannot be drafted broadly enough to cover all possible requirements of change, as the transparency principle of the procurement rules implies that all terms of the contract must be precise and unequivocal. A variation clause implying that the parties are to negotiate the change entails a risk of unequal treatment. The challenge is to draft variation clauses that are both foreseeable and provide for the necessary flexibility. If the tenderers, already at tender stage, can take into account the possibility of variations, any subsequent exploitation of these possibilities will not be modifications to the contract but modifications *pursuant* to the contract (directed variations). Further, where changes of the contract are governed by the regulations regarding substantial changes, directed variations may, as a general rule, take place without considering whether or not the change is substantial.

Price will almost always be included in the evaluation of the most economically advantageous tender, and will typically be given a higher weighting. A change in price will therefore often constitute a substantial change. If, on the other hand, the change in price is prompted by objective criteria set out in the contract in the invitation to tender, then changes in price in favour of the contractor may be expected to be allowed without a new call for tenders. The possibility of adjusting the price upwards would, in this situation, have been clear to all tenderers and thus open to competition. Therefore, it must not be left to the discretion of the parties to negotiate the price adjustments or in any other way to make an arbitrary change in price. In this respect, it is especially important to fix the pricing of the variations in accordance with the tender documents and thereby avoid negotiations. Often, however, it will not be possible to price a variation on the basis of unit prices. To avoid negotiation, the employer may apply a variation clause which provides for a pricing of variations to be based on the open book principle with a view to keeping the contractor in a state of effective competition (similar to when they initially won the contract). Stated differently, the contractor may not make additional profit on the works covered by the variations other than on the principal works (Hartlev and Liljenbøl, 2013).

A concept of variation in a construction contract under Polish public procurement by Michał Skorupski (Poland)

The Polish system of construction contracts does not fully appreciate the idea of self-adjusting a contract that would include variation clauses typical of FIDIC forms. Polish jurisdiction has been burdened by a resolution of the Supreme Court (a resolution of the Supreme Court answers a generic legal question arising in relation to a particular case, contrary to a verdict of a court in a specific case itself) of 22 May 1991 (III CZP 15/91) which stated that clauses which entitle one party of the contract to change the contract in its own consideration are in conflict with the general regulations of the Polish Civil Code (Article 353).

Parties are free to stipulate the contract provisions unless such provisions contradict the principles of 'community life'. The judges ruled that leaving the unlimited possibility of introducing

changes to the contract by one party is against the principles of community life. The principles of 'community life' (in Polish: *zasady współżycia społecznego*) is a concept in the Polish legal system (especially the civil code), according to which relations between individuals, parties to the contract, the state, etc. should reflect the generally accepted rules of fairness, honesty and justice. The principle refers a lot to habits and established practice so if one party proposes a change to a contract, the other has to have an opportunity to reject it. A similar decision was handed down by the Supreme Court on 18 March 1993 (I CRN 22/93). Since then we have debated whether a variation or adjustment of the contract price, the time for completion, the programme or the specification can constitute a change in the contract itself and would require a separate mutually agreed annex to it.

FIDIC contract conditions at Clause 13.1 gives the right to the contractor to refrain from executing the change if 'the contractor cannot readily obtain the Goods for the Variation'. Furthermore, it is stated that each variation 'shall not comprise the omission of any work which is to be carried out by others'. It is clear to construction professionals that the right to vary is not unlimited. It is also clear that a complex procedure for variations is in place to limit the powers of the employer's personnel.

However, the governing law and its interpretations are not really created by construction professionals in Poland. In particular, public employers follow the advice of lawyers to stay on the 'safe side' when spending public money. In 2004, after accession to the EU, Polish institutions and beneficiaries started to pay special attention to the avoidance of risk of returning EU subsidies. Strict implementation of EU public procurement directives led to an important problem: which expenses can be safely determined as eligible for a subsidy? In general, illegal expenses cannot. Staying on the safe side meant that local legislation and interpretations should enforce 'strict', 'clear', 'unequivocal' and, importantly, 'legal' conditions of a contract.

The Polish Public Procurement Act of 2004 at Articles 29 and 31 requires public employers to specify the scope of a public construction contract by using adequately precise and clear drawings (*dokumentacja projektowa*), specifications (*specyfikacje techniczne wykonania i odbioru robót*) or functional specifications for D&B projects. However, in conjunction with Article 5 of the Ordinance of the Minister of Infrastructure of 2 September 2004, the drawings and specifications have to provide sufficient information not only to prepare the tender, but also to execute the works. Similarly, the employer's functional requirements shall be sufficient to calculate the tender price as well as to design the works (and then build them in accordance with this design).

In Poland, it is the role of the public client to prepare the whole scope of works, the contract conditions, other terms and requirements. These are all, in principle, non-negotiable. You either accept them and submit a tender or reject them and withdraw. There is only a very limited possibility of challenging a client's proposal through the public procurement arbitration board (*Krajowa Izba Odwoławcza*). As a norm, the system does not allow contract particulars to be negotiated at all.

Between 2004 and 2007, many legal and bureaucratic interpretations were presented in the public domain in respect of how public employers in reality must prepare the contracts. If the specification has to be perfect enough for tender procedure and works, then any variations, changes or instructions issued in the execution phase can be perceived as failures made at the preparation phase. As a precaution, the Ministry of Regional Development issued a memorandum with instructions to the beneficiaries of EU funds that any such changes, variations or instructions (even if technically justified), would be treated as ineligible. At the same time,

implementation of the EU procurement directive demanded (and still demands) additional orders (*zamówienie dodatkowe*, *zamówienie uzupełniajace*) (note that in Poland according to the public procurement law, there is a separate procedure for additional works of the same kind, e.g. another kilometre of the same road (*zamówienie uzupełniajace*) and another procedure for additional works which were not foreseen at all in the Terms of Reference but are indispensable for completion of the basic works (*zamówienie dodatkowe*), and for works which could not have been foreseen at the time of the tender. Effectively, under Polish legislation, such additional orders are separate public contracts. And such orders would not be treated as eligible for EU subsidies. Even if the engineer determined additional costs to be paid to the contractor under the FIDIC terms, there should be an additional ineligible contract for that cost (sometimes it is extremely difficult to define the scope for such an additional contract if the only thing required is to cover the unexpected additional costs of works which have been already described in the original contract). In order to improve the situation, one of the amendments to the Public Procurement Act was that annexes of already executed contracts (rather than additional orders) could be foreseen in the terms of reference. Since 2004, there have been more than 30 amendments to the Public Procurement Act (being direct amendments or amendments resulting from other Acts).

The result is that a typical public construction FIDIC-based contract claims to be perfectly prepared and designed. The original and measured remuneration is changed into a lump sum (not more than the accepted contract amount) and the majority of risks are transferred to the contractor directly through specific contract conditions or indirectly by provisions of the technical specifications. Even if the contract allows for claims, the given specification allocates full responsibility and risk to the contractor. For example, negotiations with service providers, negotiating rights of ways, permits or even errors in the tender design are all deemed to be included in the accepted contract amount.

When the need for a variation/change order/instruction actually materializes, the system does not offer any simple solutions. Given the likely outcome discussed above, many lawyers have proclaimed FIDIC forms to be practically 'illegal' in Poland. Their main argument is that engineers routinely make adjustments to the contract price, scope and time for completion and this is against the law. Employers, in order to protect themselves, make all variations and accepted claims into a form of an additional order or annex. The wording and conditions of the annexes are negotiated on a take-it-or-leave-it basis by the employer.

A typical FIDIC-based contract used in Poland includes amendments that limit the responsibility of the employer for actions and determinations of the engineers. For example, the specific conditions erase the provisions of Sub-Clause 3.1 which states that 'whenever the Engineer exercises a specified authority for which the Employer's approval is required, then (for the purpose of the Contract) the Employer shall be deemed to have given the approval'. In respect of determinations related to claims, the employer may add that 'written consent of the Employer is required'. Or, finally, somewhere in amendments to Clause 13 you may find a sentence like: 'any Variation increasing the Contract Price requires an annex to the Contract Agreement otherwise it will be deemed null and void' (note, this is not required when decreasing the contract value).

In every project, claims and variations are encountered, but unless the employer signs an annex, a determination or variation can be deemed non-binding retrospectively. Thus, the engineer is often used as a tool to promise scope and price adjustments, but with little factual power to implement it. At the end of the day the contractor is rarely sure of their legal position. When

the annex is finally prepared, it usually eliminates any chances for further claims of the contractor. Polish courts respect the rule of *volenti non fit iniuria* (in English: to a willing person, injury is not done, i.e. if you do something willingly, you must not claim damages, a concept widely used in European legislation). In practice, if the contractor signs an annex, say, in the third year of the contract (in which he agrees to a new time for completion, but the contract price remains unchanged), then the contractor has willingly agreed to the price being satisfactory and all potential claims are lost.

Of course, one can imagine a contrary situation, when it is the employer who wants a change of scope. Then the contractor is in better negotiating position and can try to impose unreasonable rates and prices. Both situations contradict the principle of a self-adjusting contract, where parties have agreed how and based on what rates they will administer variations.

Instead of having one variation procedure, all variations and determinations require further validation in the form of additional orders or annexes to the contract. This generates a constant uncertainty and weakens the bargaining position of the party demanding the change. Rather than using pre-agreed rates, parties always get into difficult negotiations as to which rates shall really apply: contractual rates, market rates, adjusted contractual rates, adjusted market rates, etc. This has happened continuously in Poland since 2004.

I believe all of this is a good example of the consequences of misunderstanding the concept of a variation within the contract, rather than the change of the contract itself.

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7 Time

7.1 Time in construction

The concept of time, particularly in terms of *time for completion*, is one of the most important legal and managerial aspects in a construction project and ranks among the top priorities of construction project participants. When discussing 'time' in a construction context, we usually think of time for completion. However, contracts contain many other specific time-related provisions and issues, for example, reaction periods, periods for mutual notices, fulfilment of partial duties, and so on.

7.2 Delay

Delays may be caused by the employer, the contractor, the contract administrator, third parties or by reasons beyond the parties' control. This may lead to an extension of time for completion (EOT). Sometimes only some works (activities) are delayed and do not require an extension of time for completion, but may result in disruption (see below), i.e. more difficult working conditions.

Delay may lead to damages on the employer's side and are typically in the form of:

- delayed yield (or public benefit) from an investment;
- increase in the price of the work and respective complications in relation to lenders;
- defective cash flow;
- loss of employer's goodwill.

If found responsible, the contractor may be sanctioned or be ordered to pay damages, in the form of:

- contractual penalty/delay damages;
- damage compensation;

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- loss of performance bonuses; or
- loss of contractor goodwill.

If it is necessary to speed up the construction process, acceleration becomes an issue of interest to construction project participants (see Chapter 8).

An excellent summary of the principles applicable to claims for delay was set forth in the ICC case no. 12654 (ICC, 2012). Two European companies (incorporated as a limited liability company in a Balkan country), as the contractor, had to build a two-lane road for the local Ministry of Transport (General Roads Directorate) as the employer from the same country. The contractor argued that it was not given possession of the site in due time because the employer was late in expropriating and evacuating the necessary plots of land. On the other hand, the employer argued that the contractor had not submitted the final design for the road on time which prevented the employer from expropriating the land necessary to give the contractor possession.

The ensuing tribunal held that if a contractor is delayed in completing the work, its cost of performance increases simply because those elements of its cost that are dependent on time require more time. For example, the contractor is likely to have 'field' overheads cost for its field offices, telephones and field supervision. These costs (being directly time-related) represent pure delay cost. In addition to the purely time-related delay cost, the contractor's cost of performance may increase because: (1) delayed work itself is completed in an unproductive manner; or (2) subsequent related work may be done out of sequence or on a piecemeal basis instead of as an uninterrupted sequence as planned. Labour productivity rates may suffer as a result, causing contractor costs to increase. Although these disruption costs may, in the proper circumstances, be compensable elements of delay damages in that they are incurred as the result of delay, they may also be caused by factors unrelated to delay.

In order to recover its additional costs, it is not enough for the contractor to show that work was completed later than planned and that the contractor experienced coincidental cost increases. To demonstrate its entitlement to compensation for delay damages, the contractor must demonstrate that under the governing contractual provisions the delay is excusable – that is, the delay was of a type for which the contractor is not contractually liable – and that the delay is also compensable – that is, the delay was of a type which entitles the contractor to compensation and not just an extension of time to perform the work. Having established its entitlement to damages, the contractor must then demonstrate the quantum of its resulting damages.

Stated simply, excusable delays are those delays from which the contractor is excused from liability. As a general rule, a contractor is excused from liability for delays that are the result of causes beyond the contractor's control and delays which are the result of causes that were not foreseeable.

The contractors are entitled to compensation if they can show that they did not concurrently cause the delay and they can quantify its damages with reasonable certainty. Once the contractors have established that the individual delay for which an extension of time sought is excusable and, if compensation is sought, compensable as well, it is necessary to determine whether or not the contractors were independently delaying the work. If the contractors would have been delayed in any event

by causes within their control, that is, if there was a concurrent non-excusable delay, the general rule is that it would be inequitable to grant the contractors either an extension of time or additional compensation; unless the contractors can segregate the portion of the delay which is excusable and/or compensable from that which is not. The contractors bear the burden of proving the extent of the delays for which they seek compensation and, in addition, the burden of proving damages incurred as a result of such delays. For the purposes of determining whether the project was delayed and for the purposes of apportioning delay, only delay on the critical path of the project figure in the analysis as relevant because, by definition, delays not on the critical path will not delay the completion of the project.

The tribunal ultimately concluded that part of the delay in giving possession of the site was due to the employer and awarded the contractors part of their claimed cost.

7.3 The United Kingdom Society of Construction Law Delay and Disruption Protocol

In general, the common, significant aspects of construction project time management such as delay, disruption, time programme details, float and concurrency are insufficiently dealt with by sample contracts (including those of FIDIC), local codes of best practice and governing law. The most widely known exception is the United Kingdom with the SCL Protocol (the Delay & Disruption Protocol, published by the United Kingdom Society of Construction Law; free downloads are available at http://www.scl.org.uk/resources) that can be made a part of the contract by reference.

The United Kingdom Society of Construction Law published the SCL Protocol in 2002 to help construction project participants deal with time management issues that arise within construction projects by offering well-established dispute prevention and resolution methods. The SCL Protocol provides the fundamental rules applicable to delays, disruptions and compensation in its four parts:

1. Guidelines on the SCL Protocol's position on Core Principles and on other matters relating to delay and compensation.
2. Guidelines on preparing and maintaining programmes and records.
3. Guidelines on dealing with extensions of time during the course of the project.
4. Guidelines on dealing with disputed extension of time issues after completion of the project – retrospective delay analysis.

The SCL Protocol proposes an approach to extension of time for completion claims and delay compensation at different phases, for example, before realization, during contract administration and in dispute resolution. The authors of the SCL Protocol clearly emphasize in the Introduction that the issue of delay and disruption raises many questions that have no definitive answers and must be assessed on a case-by-case basis. Despite extensive and constant critique in the UK, the SCL Protocol remains a useful reference and unique guide for time management in construction projects. A new form of contract was recently published in the UK which is the first to adopt the principles contained in the SCL Protocol (the *CIOB Complex Projects Contract 2013* form of contract).

According to the SCL Protocol, delay and disruption issues that ought to be managed and dealt with by contractual provisions all too often escalate into full-blown disputes that have to be decided by third parties such as adjudicators, dispute review boards, arbitrators and judges. The number of such cases could be substantially reduced by the introduction of a transparent and unified approach to the understanding of programmed works, record keeping methods and identifying the consequence of delay and disruption. Users of the SCL Protocol should apply its recommendations with common sense. The SCL Protocol is also intended to be a balanced document, reflecting the interests of all parties to the construction process equally. Some of its main features and principles will be discussed below.

7.4 Time programme

One of the main goals of a good contract is to reduce claims and variations that may occur within construction projects while respecting that claims and variations are inevitable. Even the best contracts need tools to enable efficient claim and variation management. Next to the respective provisions for variation and claim management (such as those contained in Chapters 13 and 20 of the FIDIC forms), an instrument to control time for completion is important in this regard. The time schedule (the 'programme' in the FIDIC forms) is one of the most important tools to be used by individual project participants for the purpose of successful project management.

According to the SCL Protocol, the contractor should prepare (and the contract administrator should accept), a properly prepared programme showing the manner and sequence in which the contractor plans to carry out the works. The programme should be updated to record actual progress and any extensions of time granted. If this is done, then the programme can be used as a tool for managing change, determining extensions of time for completion and periods of time for which compensation may be due. Contracting parties should also reach a clear agreement on the type of records that should be kept.

According to the SCL Protocol, most standard forms of contract contain inadequate requirements for generating an accepted programme and/or keeping it up to date. The SCL Protocol recommends that the parties reach a clear agreement on the programme. The agreement should cover:

- the form the programme should take (including critical path and key resources attributed to particular activities);
- interaction with the method statement describing in detail how the contractor intends to construct the works and the resources (including sub-contractors) and being fully cross-referenced with the programme;
- the 'reasonable' time within which the contractor should submit a draft programme for acceptance. Reasonable time will depend on the complexity of the project and should, ideally, be determined before the works are started.
- a mechanism for obtaining the acceptance of the contract administrator of the draft programme. The contractor and not the contract administrator controls the method and sequence of construction and bases the tender price on their ability to do so. Therefore, the contract may contain a provision to the effect that

if the contract administrator does not respond to the contractor regarding the programme within a specified time, it should be deemed to be accepted. Disagreements over what constitutes the accepted programme should be resolved immediately and not be allowed to continue throughout the project. The SCL Protocol recommends the use of incentives or penalties such as liquidated damages to 'encourage' the contractor to prepare and up-date the programme.

- requirements for updating and saving of the accepted programme. Actual progress should be recorded on a monthly basis by means of actual start and actual finish dates for activities together with percentage completion of currently incomplete activities and/or extent of remaining activity duration.
- methods of keeping accurate and current records.

7.4.1 Critical path method

The critical path method (CPM) was developed to reduce time-related disputes and enable efficient time management. In practice, a contract may include the contractor's obligation to mark out a *critical path* in the programme whenever it is submitted (updated). Under the SCL Protocol, the critical path is defined as the 'sequence of activities through a project network from start to finish, the sum of whose durations determines the overall project duration'. There may be more than one critical path depending on workflow logic. A delay to progress of any activity on the critical path will, without acceleration or re-sequencing, cause the overall project duration to be extended, causing a critical delay.

The critical path method is, therefore, the process of describing the critical activities in a programme by tracing the logical sequence of tasks that directly affect the date of project completion. It is a methodology or management technique that determines a project's critical path. The resulting programme may be depicted in a number of different forms, including a Gantt or bar chart, a line-of-balance diagram, a pure logic diagram, a time-scaled logic diagram or as a time-chain diagram, depending on the nature of the works represented in the programme.

The position of the SCL Protocol is that the contractor should submit (and the contract administrator should accept) a programme (using commercially available critical path method project planning software) showing the manner and sequence in which the contractor plans to carry out the works. This should be done as early into the project as possible. Both the contractor and contract administrator should have a copy of the software package used to prepare the project programme. For the programme to be suitable for use as a tool for the analysis and management of change, it must be properly prepared so that, when a change occurs, it can accurately predict the effects of that change. The programme should be provided in electronic form to the contract administrator and the critical path should be identified by the contractor. Every project has at least one critical path consisting of a list of activities that should be under constant supervision to secure the timely completion of the project.

The continuous monitoring and evaluation of the critical path and the causes of delay and disruption are often the only way to manage the variations and claims (including the effect on cost). The CPM allows easier and more efficient coordination of mutually related activities within a project.

7.5 Ownership of floats

Comprehensive time schedules in large construction projects cover an enormous volume of activities that are interrelated, overlapping and running concurrently. Each of them can contain a time allowance at their beginning and end. In the case of delay and extension of time for completion, it often becomes difficult to determine who is entitled to make use of this allowance (the float, that is, the time for completion not described in the critical path). A time schedule is usually prepared for tender by the contractor who distributes floats in their own favour (to procure materials, subcontractors, plants, and so on) and to reduce realization risks on their side. Such an apparent float may sometimes be a part of an indicative time schedule in employer tender documents. A widely accepted approach is to stipulate within the governing law or in a contract clause who owns these floats (their creator, the employer, the project, etc.).

In Section (a) 1.3.1, the SCL Protocol deals with ownership of floats, concluding that:

> Unless there is express provision to the contrary in the contract, where there is a remaining float in the programme at the time of an Employer Risk Event, an EOT should only be granted to the extent that the Employer Delay is predicted to reduce to below zero the total float on the activity paths affected by the Employer Delay.

The authors of the SCL Protocol themselves warn that the adequacy of this rule must be considered on a case-by-case basis. For example, a situation may appear when the contractor-scheduled float may need to be drawn down due to a delay caused to the contractor by the employer, for example, when the employer delays the contactor by late submission of design approval. The contractor then appears to be in default by reason of milestone delay. This means that if a contractual penalty is sought by the employer, it would almost certainly be in conflict with good manners.

The SCL Protocol further advises the contractor to identify every such float for the related activity by demonstrating their 'ownership' of it.

Time extension and float ownership under the FIDIC Red and Yellow Books (1999 editions) (BAMCO FDTEA final argument) by Frank Thomas (France)

In the construction industry, delay claims have been the subject of many debates and disputes between employers and contractors. This is especially so in cases where construction contracts do not explicitly establish the quantum technology to be applied when determining time extensions and handling float ownership. Disputes then usually become unavoidable. Currently, the majority of planning of the design and construction works is performed by powerful critical path method (CPM) planning software on computers operated by program specialists. Today, more and more Employers require Contractors to prepare their programs with specific CPM planning software. The main advantage of CPM planning software is that it is capable of

breaking down the works into multiple detailed activities. Each activity has a specific duration and is interlinked to a sequence of activities (networks) with specific relationships in accordance with the construction logic and other time constraints (key dates, resources, working time, etc.). A CPM program also enables the Contractor to identify the critical path and to monitor the works progress in real time, thus enabling the preparation of program updates whenever required. In addition, the contractor is also able to more precisely forecast the cost expenditures and to achieve the project within the planned time and cost budget by allocating and uploading the resources in the program.

Programs prepared with CPM techniques also have another great advantage: they are 'dynamic'. This simply means that any program with a proper critical path is able to simulate a 'what if' scenario. For example, if a delay occurs during the construction period and delays specific activities, then it is possible to insert such a delay into the program. The potential effect on the project completion date can then be simulated by using a specific delay analysis technique (e.g. impacted as planned, time impact analysis). It is then possible to predict the effect of such a delay on the project completion date in a prospective manner which should then enable the engineer to determine any time extension efficiently. The CPM planning software is therefore a 'dynamic' tool capable of demonstrating the effect of delays on the completion date.

One major disadvantage of CPM planning software is that it is complicated to use. Prior to becoming a successful CPM planning software operator, a long training period will be necessary in order to become familiar with all its features. This long learning curve and the difficulties encountered with CPM algorithm planning technicalities often discourage many construction engineers and lawyers from learning even the basic principles of the CPM planning software language. Operating CPM scheduling software should, however, be distinguished from programming such software. To draw a comparison: many people today use smartphones without knowing how they are actually programmed. It is true that construction planning software is not as user-friendly as the millions of applications developed for smartphones. However, some fundamentals like the intrinsic critical path logic of the planning software can be relied upon in order to establish the effect of delays on the project completion. In other words, it is possible to understand the meaning of a critical path in the CPM planning software language without the need to become a specialized CPM operator.

In this vignette, I analyse the question of time extension determination and float ownership under the FIDIC Red and Yellow Books (1999 editions). The aim is to demonstrate that the time extension mechanism provided under these Contract forms is actually reasonably clear and understandable when the standardized critical path terminology of the CPM planning software language is well understood and applied by the FIDIC contract users. It is true that Sub-Clause 8.4 does not refer to any 'critical path' or 'float' terminology. It does not mean, however, that such terminology should be ignored when it comes to the evaluation and determination of delay claims under the FIDIC conditions of contract. 'Critical path' and 'float' terminology is sometimes used by construction engineers and lawyers without knowing its true meaning in the CPM scheduling software language. Its proper definition and understanding in the CPM algorithm planning language are, however, very useful for FIDIC practitioners because it should help them to anticipate or solve disputes on many delay claims issues.

At first glance, it seems that the FIDIC Red and Yellow Books do not regulate the manner in how time extensions should be actually presented, evaluated and determined. Is it really so? By cross-referencing the relevant Sub-Clauses 8.2, 8.3, 8.4 and 10.1 of the general conditions of

contract ('GCC') of the FIDIC Red and Yellow Books (together with the meaning of the critical path mechanics of the CPM planning software language), it is possible to determine appropriate time extension quantum methodologies and to resolve the float ownership question unambiguously. The aim of this vignette is to give some practical guidance on how time extensions can actually be evaluated and properly quantified and to resolve the float ownership question in accordance with Sub-Clause 8.4.

First, I will briefly analyse:

- FIDIC Red and Yellow Books provisions related to time extension determinations;
- the critical path and float terminology defined by the most common CPM planning software.
- The resulting float ownership under the FIDIC Red and Yellow Books.

In addition to the capitalized definitions in the general conditions of contract (CoC), the following definitions will be used:

- contract completion date (CCD): the date of the last day of the time for completion period stated in the appendix to tender;
- actual completion date (ACD): the date certified by the engineer in the taking over certificate on which the works or Section were completed in accordance with the contract.
- planned completion date (PCD): the completion date of the works as planned by the contractor in its programme, which can be earlier than CCD but not later, i.e. the contractor's planned date for the ACD as shown in its programme.

FIDIC Red and Yellow Books provisions related to time extension determinations

Before considering the issue of which date is determinative in any entitlement to an extension of time (the CCD or the PCD) under Sub-Clause 8.4, it is necessary to first look at whether Sub-Clause 10.1 of the GCC refers to the CCD, the PCD or the ACD. Sub-Clause 10.1 states:

> Except as stated in Sub-Clause 9.4, the works shall be taken over by the employer when:
>
> (i) the Works have been completed in accordance with the contract, including the matters described in Sub-Clause 8.2 and except as allowed in sub-paragraph (a) below, and
> (ii) a taking over certificate has been issued, or is deemed to have been issued in accordance with this Sub-Clause. The contractor may apply by notice to the engineer for a taking over certificate not earlier than 14 days before the works will, in the contractor's opinion, be complete and ready for taking over … The Engineer shall, within 28 days after receiving the contractor's application:
> (a) issue the taking over certificate stating the date on which the works or Section were completed in accordance with the contract, except for …
> (b) reject the application, giving reasons.

The reading and understanding of Sub-Clause 10.1 of GCC are clear. The contractor is free to apply for a taking over certificate if, 'in his opinion', the works are 'complete and ready to be taken over'. The contractor has total freedom to determine (at any time) that the works have been completed for the purpose of Sub-Clause 10.1. If this is the case and the Engineer confirms that the works have in fact been completed for the purpose of Sub-Clause 10.1, then the Engineer shall issue a taking over certificate and the employer shall take over the works.

Note that the GCC states that the employer shall take over the works at ACD and is not allowed to refuse to do so by arguing, for example, that he would rather prefer to wait until the CCD prior to taking over the completed works. Completion for the purpose of Sub-Clause 10.1 means that completion of the works shall occur at the time notified by the contractor. The contractor is also authorized to anticipate the ACD by indicating such date in its programme as the PCD. If the PCD is prior to the CCD, there is an inherent terminal float existing between these two dates. The term 'terminal float' means the time period between the PCD and the CCD appearing in the contractor's programme. If the contractor will have substantially completed its works at the ACD, as confirmed by the engineer's taking over certificates, several scenarios may then occur:

- The ACD equates to the PCD: the original terminal float remains intact.
- The ACD is achieved prior to the PCD: the terminal float increases.
- The ACD is achieved between the PCD and the CCD: the terminal float decreases.
- The ACD is achieved exactly at the CCD: the terminal float is completely exhausted.
- The ACD is achieved beyond the CCD: the terminal float falls into negative.

Sub-Clause 8.2 stipulates that:

> the contractor shall complete the whole of the works, and each section (if any) within the time for completion for the works or section (as the case may be), including:
>
> (a) achieving the passing of the tests on completion, and
> (b) completing all works which is stated in the contract as being required for the works or section to be considered to be completed for the purpose of taking over under Sub-Clause 10.1.

Sub-Clause 8.2 makes it clear that the contractor may complete the works at any time 'within the time for completion', i.e. at any date occurring prior to the CCD. Just as the contractor may actually achieve the ACD before the CCD, so too he has total freedom in his programme to plan to achieve completion for the purpose of Sub-Clause 10.1 at the PCD prior to the CCD.

Sub-Clause 8.3 stipulates:

> The contractor shall submit a detailed time programme to the engineer within 28 days after receiving the notice under Sub-Clause 8.1 [commencement of works]. The contractor shall also submit a revised programme whenever the previous programme is inconsistent with actual progress or with the contractor's obligations. Each programme shall include:

(a) the order in which the contractor intends to carry out the works, including the anticipated timing of each stage of design (if any), contractor's documents, procurement, manufacture, inspection, delivery to site, construction, erection and testing, commissioning and trial operation,
(b) …
(c) the sequence and timing of inspections and tests specified in the contract, and a supporting report which includes:
  (i) a general description of the methods which the contractor intends to adopt, and of the major stages, in the execution of the works, and
  (ii) details showing the contractor's reasonable estimate of the number of each class of contractor's personnel and of each type of contractor's equipment, required on the site for each major stage.

Unless the engineer, within 21 days after receiving a programme, gives notice to the contractor stating the extent to which it does not comply with the contract, the contractor shall proceed in accordance with the programme, subject to his other obligations under the contract. The employer's personnel shall be entitled to rely upon the programme when planning their activities.

The contractor shall promptly give notice to the engineer of specific probable future events or circumstances which may adversely affect the work, increase the contract price or delay the execution of the works. The engineer may require the contractor to submit an estimate of the anticipated effect of the future event or circumstances, and/or a proposal under Sub-Clause 13.3 [variation procedure].

If, at any time, the engineer gives notice to the contractor that a programme fails (to the extent stated) to comply with the contract or to be consistent with actual progress and the contractor's stated intentions, the contractor shall submit a revised programme to the engineer in accordance with this Sub-Clause.'

Under Sub-Clause 8.3, the function of the programme:

- is to plan the stages of the works by showing the 'order' of the contractor's activities during the design, construction and commissioning phases accompanied by a supporting report on the contractor's construction methods and reasonable estimate of resources;
- must be updated whenever actual progress falls beyond the current programme as may be notified by the Engineer.

Under Sub-Clause 8.3, the contractor also has an early warning obligation. They shall give prompt notice to the engineer if of the opinion that 'probable future events or circumstances' may adversely affect/delay the progress of the works or increase the contract price. Sub-Clause 8.3 does not specify if a 'delay to the execution of the works' caused by a 'probable future event' is to be proven on the basis of the programme produced under this Sub-Clause. Indeed, Sub-Clause 8.3 does not require the contractor to prepare its programme with a critical path (even if it is wise to establish a critical path). A linked Gantt Chart programme showing work activities without CPM relationships fulfils the requirements of Sub-Clause 8.3 (a), (b) and (c), namely, to show 'the order [in which] the contractor intends to carry out the Works'. In other words, unless specified otherwise in the particular conditions, the contractor is not obliged to show the CPM interconnections between activities by using the

CPM planning software. Of course all contractors seek to gain by establishing and showing links between activities, relevant constraints and resulting critical path in their programme. Any programme update usually requires CPM critical path analysis which can be facilitated by using the CPM planning software. It is thus in the contractor's best interests to demonstrate that their programme or update is technically feasible and in compliance with the Contract by providing a clear critical path.

No guidance is actually given in Sub-Clause 8.3 on the manner in which delays in the execution of the works should be quantified. This is probably due to the fact that contractor's notification is to be given in anticipation of a 'probable future event' which may or may not occur. The contractor shall, if required by the engineer, produce an estimate of the time and cost effect of such future event on the execution of the works.

Sub-Clause 8.4 refers to any delay or projected delay in completion of the works for the purpose of Sub-Clause 10.1 (i.e. a delay to the completion of the works beyond the PCD), as being a condition precedent to the contractor's entitlement to an extension of the time for completion:

> The contractor shall be entitled subject to Sub-Clause 20.1 [contractor's claims] to an extension of the time for completion if and to the extent that completion for the purposes of Sub-Clause 10.1 [taking over of the works and sections] is or will be delayed by any of the following causes:
>
> …
>
> If the contractor considers himself to be entitled to an extension of the time for completion, the contractor shall give notice to the engineer in accordance with Sub-Clause 20.1 [contractor's claims]. When determining each extension of time under Sub-Clause 20.1, the engineer shall review previous determinations and may increase, but shall not decrease, the total extension of time.

The extension of time objectives of the Sub-Clause 8.4 provisions of the GCC are of benefit to both parties as follows:

- Contractor: First it relieves the contractor from the payment of delay damages in the case of delays for which the employer is responsible under the contract terms.
- Employer: Second it establishes new section completion deadlines under the contract (subject to the application of delay damages) and therefore prevents the CCD becoming unknown/uncertain. This is also known as 'time at large' in common law countries, i.e. it preserves the contractual validity of any new, extended Section deadlines.

Sub-Clause 8.4 clearly stipulates that the contractor is entitled to an extension of the time for completion each time that any PCD of a section as forecast by the contractor in its programme (i.e. for the purpose of taking over in accordance with Sub-Clause 10.1) is delayed (even if the effect of such delay does not result in the PCD exceeding the CCD due to the existence of a terminal float between the PCD and the CCD).

Sub-Clause 8.4 therefore requires the contractor to demonstrate cause and effect between an employer's risk event (entitling the contractor to 'claim' a time extension) and its effect on the PCD. A 'technical' correlation must be somehow established between the occurrence of an employer's risk event and its effect on the 'as planned' project completion (the PCD). Indeed it is not sufficient for the contractor to prove the existence of an employer's risk event and damage (i.e. delay on the PCD) in order to be entitled to a time extension. In accordance with

Sub-Clause 8.4, the contractor must further prove causation ('if and to the extent the completion for the purpose of Sub-Clause 10.1 is or will be delayed by any of the following causes' …), i.e. to establish and demonstrate the link between the cause and the damage (i.e. delay to the 'as planned' completion of the works or the PCD). Causality between an event and its effect can be best proven by using CPM delay techniques. A CPM-based program is a mathematical model which combines activity durations with activity relationships. If the relationships between activities are accurate, well inter-connected and dynamically reactive, then the CPM program becomes a 'dynamic program'. It is then possible to 'add' delays into a specific sequence of activities of the CPM program and to evaluate and predict the effect of such additions on PCD, i.e. to rationally predict the resulting time extension in accordance with Sub-Clause 8.4. Such simulation can be made either prospectively or retrospectively by using different delay analysis techniques (impacted as planned, time impact analysis, collapse as built, and so on). Naturally then, it is essential to first understand the basics of critical path terminology in the CPM language.

Critical path terminology in the CPM language

It is very difficult to find a proper, homogeneous definition of the 'critical path' in delay analysis literature. The common terminology used to define a critical path usually ignores the CPM algorithm language of the planning software. Many practitioners have, for example, attempted to define the critical path as the longest path to PCD; thus allowing a terminal float to 'exist' between the PCD and the CCD in such a definition. Is this accurate? Is the CPM planning software algorithm flexible enough to accommodate such a definition? The answer is 'No' because the longest path to the PCD would have to be manipulated in order to make it critical in the CPM algorithm language. Manipulation in this case would mean imposing an algorithm constraint on the PCD by declaring that the Project must finish at the PCD (early and late finish of the last activity must be the same). This would lead to a nonsensical result because the CPM algorithm would understand this constraint as a contractor's obligation to complete the works at the PCD. The consequence would be that the CPM algorithm would then 'forbid' the contractor from freely consuming the terminal float and further prevent them from completing the works between PCD and CCD. This is also the reason why confusion of the true meaning of 'critical path' is so globally widespread. The first question is therefore to understand what 'critical' means in the CPM planning software algorithm language. Critical to what? PCD or CDD deadlines? The Red and Yellow FIDIC Books (1999 Editions) do not provide any definition or guidance in this respect and no reference is made to it in any of the Sub-Clauses.

The critical path method is a network program which models the construction logic between the activities in accordance with the 'as planned' construction methods, time constraints (e.g. access dates of the parts of the site, penalty milestones, non-working days) and the resources (limited availability of equipment, labour and supply of materials). The Society of Construction Law Delay and Disruption Protocol issued in October 2002 and reprinted in 2003 (SCLDD Protocol) defines the critical path as follows:

> The sequence of activities through a project network from start to finish, the sum of whose durations determines the overall project duration. There may be more than one critical path depending on workflow logic. A delay to progress of any activity on the critical path will, without acceleration or re-sequencing, cause the overall project duration to be extended and is therefore referred to as a 'critical delay'.

This definition of critical path is given in *Mirant Asia-Pacific(Hong Kong) Ltd v (1) Ove Arup and Partners International Limited (2) Ove Arup and Partners Hong Kong Limited* [2007] EWHC 918 (TCC). The SCLDD Protocol implicitly assumes that the programme includes a critical path determining the overall project duration without defining whether such duration ends with the PCD or the CCD. The SCLDD, however, distinguishes in its definitions, given in Appendix A, the date for completion (the PCD) from the contract completion date (the CCD). But what does it mean in relation to the above-mentioned definition of 'the critical path'? First of all, in cases where critical activities are overlapping, the sum of their durations will definitely not determine the overall project execution time (overlapping time must be deducted and this should be taken into account as well). Thus the critical path definition in the SCL Protocol does not apply to all situations.

In the CPM planning software language, a critical activity is an activity with 'zero day' total float. The total float is the number of days that the start or the duration of an activity can be delayed without delaying the CCD. The critical path can therefore be defined as the sequence of critical activities linked to each other through a project network with 'zero day' total float until the achievement of the works exactly at the CCD. It is important to note that as long as the total float is strictly positive (>0 day), then such activity is not critical. For example, an activity with 2 days total float means that you may delay the start or the duration of such activity by 2 days and still achieve completion of the works at the CCD.

In the first simplified programme presented in Figure 7.1, 10 days of total float exist for each activity A and B. Both activities are non-critical, i.e. no critical path exists in such CPM programme despite the fact that activity A and activity B and the CCD (finish milestone) are all linked together as shown.

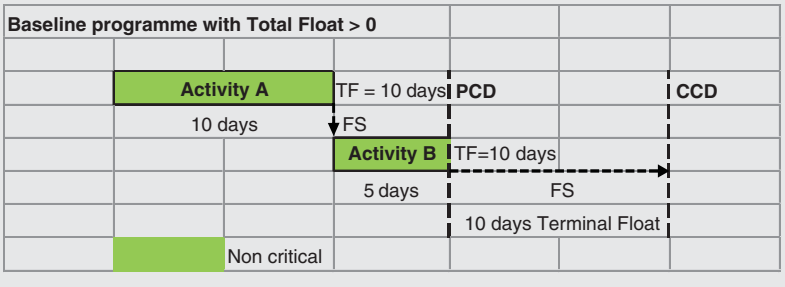

Figure 7.1

In order to incorporate a critical path in the above-mentioned simplified programme, it is necessary to eliminate the terminal float between the PCD and the CCD by introducing an activity bar called the 'contractor's time risk allowance' (CTRA). The CTRA represents a time contingency available to the Contractor for completing its works until the CCD. By introducing a CTRA between the end of activity B and the CCD, the critical path until the CCD is then clearly created and identified by reducing the total float of activity A and B to '0 day' (Figure 7.2).

Without the CTRA activity bar, there would be no critical path existing under such programme (i.e. activities A and B would have 10 days total float). The addition of a CTRA activity in a contractor's programme provides a much better visualization of contractor ownership of the terminal float. (Note: The insertion of CTRA activities is not a tool intended to defend

contractor ownership of the terminal float under the FIDIC Red and Yellow Books. This is discussed in more detail below).

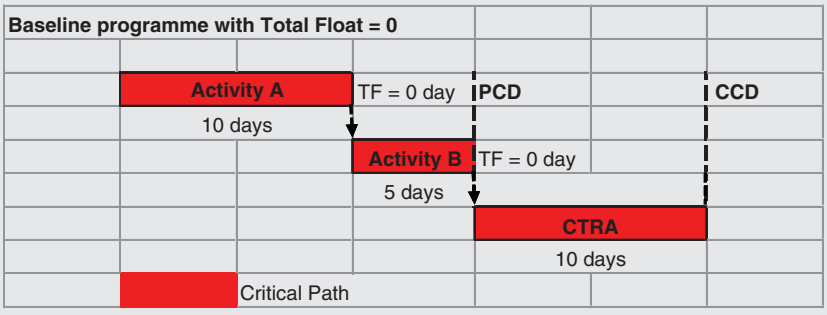

Figure 7.2

It is further important to note that under the FIDIC Red and Yellow Books, the creation of a critical path in a programme is a contractor right but not an obligation. Sub-Clause 8.3 of GCC does not require the contractor to produce a programme with a CPM critical path even if recommended to do so. Sub-Clause 8.4 entitles the contractor to an extension of the time for completion to the extent that the completion date of the works is delayed beyond the PCD as a result of an employer's delay. In practical terms, however, it will be very difficult for a contractor to demonstrate to the engineer's satisfaction the extent to which the PCD is or will be delayed by an event for which the Employer is contractually responsible if the contractor has not created a 'dynamic' programme showing how the PCD is affected.

Who then 'owns' the float under FIDIC Red and Yellow Books 1999 editions? In order to understand this very important point, let us refer to a simplified programme example. The simplified programme in Figure 7.3 shows that the contractor will complete the works consisting of activities A and B in a 'finish to start' scenario 10 days prior to the CCD. In other words, there is 10 days of terminal float in the contractor's simplified programme between the PCD and the CCD.

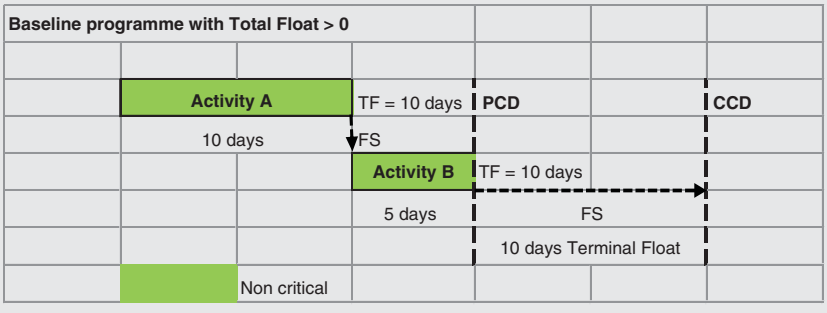

Figure 7.3

If, for example, the employer delays the start of activity A by 5 days, then the completion date of the Project forecast by the contractor to occur at the PCD will also be delayed by 5 days. Two possible scenarios may then follow:

- *Scenario 1*: The employer is authorized by the GCC to consume 5 days of the 10 days terminal float existing in the contractor's simplified programme between the PCD and the CCD. In this case, the time for completion would not be extended because the completion of the project can still occur within the original time for completion (activity B is still finishing prior to the CCD) with the effect of reducing the terminal float to 5 days (Figure 7.4); or
- *Scenario 2*: If the employer is not authorized under the GCC to consume the terminal float in the contractor's simplified programme then the time for completion would be extended by 5 days because the original forecast completion date (the PCD) is also delayed by 5 days. This has the effect of maintaining the contractor's 10-day terminal float, i.e. the contractor 'owns' the terminal float (Figure 7.5).

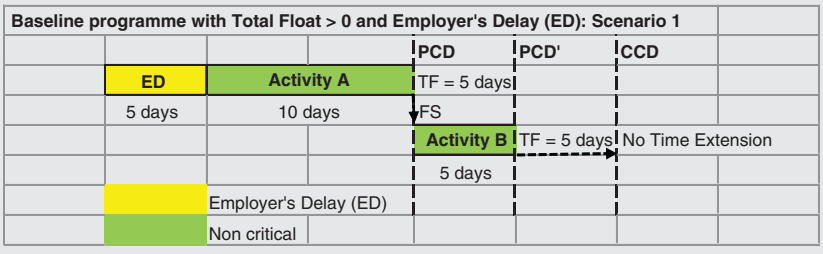

Figure 7.4

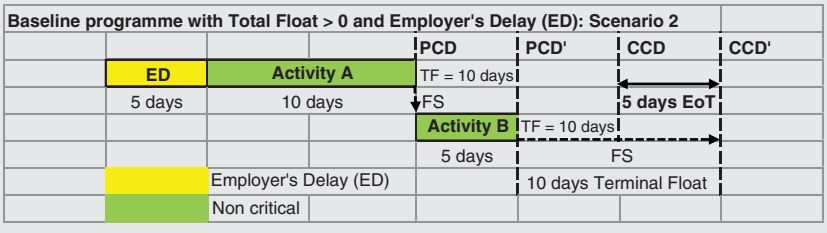

Figure 7.5

In accordance with Sub-Clause 8.4, the effect of any potential employer's delay should be first of all evaluated and measured against the PCD deadline and not the CCD deadline: 'if and to the extent that completion for the purposes of Sub-Clause 10.1 is or will be delayed by any of the following causes . . . .'. If this was not the case, then the wording of Sub-Clause 8.4 would stipulate that the contractor's entitlement to an extension of the time for completion is subject to demonstrating that a delay to the works is or will have the effect of delaying the completion of the works beyond the CCD. In such a case, the above-mentioned wording of Sub-Clause 8.4 would be amended as follows: 'if and to the extent that completion for the purposes of Sub-Clause 10.1 is or will be delayed beyond the time for completion by any of the following causes … '.

It is therefore important to adhere to Sub-Clause 8.4 of the GCC as it stands without distorting its meaning. In our simplified programme example above, a 5-day delay in completion of works (i.e. PCD) entitles the contractor to an extension of the time for completion by 5 days

as well (i.e. CCD) thus maintaining the 10-day terminal float in the contractor's ownership . If a contractor was not entitled to the terminal float, then they would need to provide a programme to the engineer that had a terminal float = 0, even if the 'real' programme used to plan the project had contingency (TF). It is in the interests of good project management that the contractor provides the 'real' programme to the engineer so that everybody 'is singing from the same hymn sheet'.

The implicit correlation between the CCD and the PCD as delineated under Sub-Clause 8.4 in conjunction with Sub-Clauses 8.2 and 10.1 establishes, unambiguously, the contractor's ownership of the terminal float between the PCD and the CDD. If the contractor is not the owner of the terminal float between the PCD and the CCD, then the employer would, in effect, be allowed to take time away from the original time for completion. Thus the contractor would then be obliged to insert a constraint on the PCD in order to render the path to the PCD critical. Sub-Clause 8.4 concludes by confirming that the total of all extensions of time, either for the works or for a particular section, cannot be subsequently decreased. This is so even if a number of omissions are instructed as variations and the contractor is able to achieve completion sooner than is required under Sub-Clause 8.2. The employer or engineer is not then empowered to reduce the time for completion in this respect. The terminal float therefore legitimately belongs to the contractor. There is no mechanism in the contract which would enable the Employer to take this time contingency away from the contractor. In other words, cross-referencing and literal interpretation of Sub-Clauses 8.2, 8.4 and 10.1 clearly establish the fact that the contractor owns any float existing between its 'originally as planned completion date of the Project' (the PCD) and the 'date of time for completion' agreed in the contract (the CCD).

The question remains as to whether there is any other float which could be jointly (as opposed to exclusively) owned by both parties under the FIDIC Red and Yellow Books? The answer is yes, i.e. the 'free float'. The free float is the number of days that the start of an activity can be delayed without delaying the activity following it. By definition, the activities on the critical path have no free float. In such cases, any employer's delay having the effect of consuming the free float of any activities will have no effect on the completion of the works which can still be achieved at the PCD. The free float has to be, therefore, differentiated from the terminal float. The terminal float is a time contingency between the last activity of a sequence leading to the PCD and the CCD, while the free float is a time contingency between two activities. Usually all scheduling software is able to display the total float and free float in two separate columns, thus enabling establishment of party ownership of these time contingencies in an undisputed manner.

Findings resulting from the combination of CPM scheduling terminology with the FIDIC Red and Yellow Books planning and time extension requirements

With the help of the CPM scheduling terminology, we have now determined that under the FIDIC Red and Yellow Books:

- A critical path is a sequence of a critical activities with '0 day' total float linked to the CCD (and not to the PCD).
- The terminal float between the PCD and the CCD is owned by the contractor and can be replaced by an activity bar called the contractor's time risk allowance.

- As long as consumption of the free float has no impact on the PCD, it can be consumed by either the employer or the contractor.

Analysis of Sub-Clauses 8.3 and 8.4 further reveals that:

- The Sub-Clause 8.3 programme is aimed at planning the order of activities with supporting reports on resources and construction technology, to measure achieved progress and to produce updates when actual progress falls behind the current programme. Sub-Clause 8.3 does not require the contractor to produce a programme using CPM techniques even if advisable and recommended.
- The granting of an extension of the CCD under Sub-Clause 8.4 is subject to the contractor's capability to demonstrate that there is direct causation between an employer's risk event and its impact on the PCD (and not the CCD). This demonstration is best achieved by using the CPM programme. This can be performed prospectively/retrospectively by predicting the effect of a delay on the critical path.

Even if common sense suggests using the Sub-Clause 8.3 baseline programme for the purposes of evaluating and determining a time extension under Sub-Clause 8.4, such a programme may not be suitable, especially if no critical path exists. As Sub-Clauses 8.3 and 8.4 are not cross-referenced, nothing prevents the contractor from creating a CPM baseline specifically for the purpose of Sub-Clause 8.4, i.e. a CPM baseline programme capable of demonstrating cause and effect 'dynamically' (a 'what if' programme). Such a programme can of course be prepared on the basis of a Sub-Clause 8.3 programme, provided all relationships between activities are fully accurate, well inter-connected and dynamically reactive. The best way to check this is to 'add/insert' delays into a specific sequence of activities in order to see how the baseline programme 'reacts', i.e. to observe how the PCD (if a terminal float exists) or the CCD are moving to the right. Engineers are usually keen to accept programmes in their 'static' form (i.e. paper, pdf, Excel) without testing them for delays. Even if the baseline programme is submitted in the usual CPM scheduling software format, engineers are usually reluctant to perform such a dynamic test because it is not required under Sub-Clause 8.3. The critical path of a programme can, however, only be checked properly if typical 'test' delays are 'added/inserted' into the programme in order to observe how the PCD and the CCD will react to them. This is a dynamic test setting the critical path in motion with the result of simulating the effect of delays on PCD and CCD.

This leads to the conclusion that, in almost all cases, it is recommended for the Contractor to adjust its Sub-Clause 8.3 baseline programme to create a critical path to the CCD for the purpose of quantifying time extensions under Sub-Clause 8.4. It means that in practice the contractor will develop a baseline programme with a clear relationship in order to create a 'host schedule' baseline capable of simulating the effect of parties' delays directly on the CCD. The first adjustment consists of eliminating the terminal float. This is replaced by a contractor's time risk allowance activity which properly links it to all other activities. Leaving the terminal float open would only complicate the delay and time extension analysis because the CPM critical path would only appear after its consumption. This is also consistent with the definition of the

critical path discussed earlier. It is therefore wise to create the critical path to the CCD as soon as possible (e.g. in the first Sub-Clause 8.3 programme to be submitted to the engineer). Of course, the 'addition' of delays in this new host schedule baseline (created for the purpose of quantifying the time extension) will have to be performed according to specific delays analysis techniques. These are discussed further below.

In order to simulate/predict the effect of a delay event on CCD at the time of its occurrence, it is necessary to impact the relevant activities of the host schedule baseline with such a delay event (after quantification) in a chronological order. This simulation/prediction of the net compounded effect of several delays is made under the assumption that the original works sequence/logic and resource capacity will remain unchanged. The first step is to quantify the duration of each delay event from start to end. This can be estimated by using working ratios based on (1) the contractor's/engineer's own experience or (2) the time difference between the 'as planned' execution time of an activity in the contractor's baseline programme and (3) the experienced 'as built' execution time of such activity if no working ratio can be reasonably applied. For example, a permit/design resulting from the employer's delay can usually only be quantified in an 'as built' manner, i.e. after the delay event has ceased. Each individual delay is to be added into the host schedule baseline in chronological order in order to simulate and predict its critical effect on the CCD (prospective approach). The effect of such an addition is either to delay/shift the start of an activity or to prolong its overall duration. Prolonging the duration of an activity simply means linking the original activity duration to the relevant delay event, thus delaying the 'as planned' activity (the original duration remains unchanged). Any CCD movement resulting from such a delay testing enables the analyst to predict the new Time for Completion date. The delay testing process is then repeated until all the delays have been added. The addition of delays is processed incrementally in a chronological order to determine the overall contractor's entitlement to an extension of the CCD resulting from the net compounded effect of delays.

This method is also known as the 'impacted as planned' if the delays are added event by event. In 'time impact analysis' (TIA) the delays are added window by window or in 'slices' (e.g. month by month). If such an analysis is performed after completion of the works, the 'as built' programme should also be incorporated in the delay analysis for re-scheduling purposes.

Conclusion

Provided that the 'total float' (TF) and the 'free float' (FF) are always clearly identified in the contractor's programme by appropriate CPM scheduling software and the wording of Sub-Clauses 8.3 and 8.4 of the FIDIC Red and Yellow Books:

- This fully supports the fact that the contractor 'owns' any terminal float existing in his programme, i.e. when the total float is positive and the free float is zero days.
- This does not support the fact that the contractor 'owns' any positive free float which is then, at the disposal of the project. However, when such a free float is entirely consumed by the project (either by the employer or the contractor), then any remaining terminal float (when $TF > 0$ and $FF = 0$) remains in the ownership of the contractor.

As the definition of 'critical path' in the CPM software language is linked to 'zero' days total float, I would therefore suggest defining the critical path, total float and free float as follows:

- *Critical path*: The critical path is a series of activities linked to each other through a project network that determines the overall project's completion time. The duration of the activities on the critical path controls the duration of the entire project. Without acceleration or re-sequencing, a delay to any of these critical activities will delay the finish date of the entire project. A critical activity is an activity with 'zero days' free/total float. The critical path is defined by the sequence of critical activities linked to the contract completion date (CCD).
- *Total float*: The total float is the number of days the start of an activity can be delayed without delaying the planned completion date (PCD).
- *Free float*: The free float is the number of days the start of an activity can be delayed without delaying the activity following it.

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7.6 Time at large and Extension of Time (EOT)

Time at large is a common law principle. Under this doctrine, the agreed time for completion (under delay damages) no longer applies because its fulfilment is prevented by the employer and the contract lacks any mechanism for extension of time for completion or when such a mechanism is non-functional. Under these circumstances, the contractor is excused from the duty of completing the work by the original contractual deadline, instead being obliged to do so within a reasonable period of time. The employer may not then claim delay damages.

According to the SCL Protocol an EOT (extension of time) is additional time granted to the contractor to provide an extended contractual time period or date by which work is to be (or should be) completed and to relieve it from liability for damages for delay. The benefit to the contractor of an extension of time for completion is to relieve them of liability for damages for delay for any period prior to the extended contract completion date. The benefit of an extension of time for the employer is that it establishes a new contract completion date and prevents time for completion of the works becoming 'at large'.

Good contracts contain a mechanism for an extension of time for completion. However, situations may arise when, for example, the employer fails to respond to the contractor's warnings, claim notifications and updated time schedule submissions. Facing this, common law lawyers take the attitude that if the employer fails to respond to the contractor's notification and fails to make a decision about a claim, then the time for completion is not determined (time is at large). The contractor is then obliged to complete the work within a 'reasonable period' in respect of all the circumstances.

There is no equivalent to the common law concept of 'time at large' in civil codes. In such circumstances, various provisions of civil law may be used. Time at large is based on the common law 'prevention principle', by which it would be inequitable for the employer to enforce the contractor's failure to meet the completion date when this was caused by reasons for which the employer was responsible (an 'act of prevention') and where the contract either has no mechanism for extending the completion date, or that mechanism has become inoperable.

In civil codes, similar provisions are regularly encountered. These provisions protect the contractor in delay who is prevented from performance by the employer in cases where the contractor was acting in good faith. For example, Article 1147 of the *French Civil Code* states:

> A debtor shall be ordered to pay damages, if there is occasion, either by reason of the non-performance of the obligation, or by reason of delay in performing, whenever he does not prove that the non-performance comes from an external cause which may not be ascribed to him, although there is no bad faith on his part.
>
> (trans. Georges Rouhette, Professor of Law, with the assistance of Dr Anne Rouhette-Berton, Assistant Professor of English)

The related principle is contained in Article 5.1.3 of the UNIDROIT Principles (Co-operation Between the Parties) which states that: 'Each party shall cooperate with the other party when such co-operation may reasonably be expected for the performance of that party's obligation.' A further related provision is Article 7.1.3 of the UNIDROIT Principles (Withholding Performance):

> (1) Where the parties are to perform simultaneously, either party may withhold performance until the other party tenders its performance. (2) Where the parties are to perform consecutively, the party that is to perform later may withhold its performance until the first party has performed.

An interesting example of the admission of the time at large principle in the civil law environment is case no. 310/2002 Ad Hoc (final award dated 8.8.2005) decided in international construction arbitration at the *Cairo Regional Centre for International Commercial Arbitration*. This case involved a dispute between an European construction company and an Afro-Asian tourism company. The matter was resolved under Egyptian civil law before a British Chairman and two Egyptian members.

The arbitrators held that:

> [W]here a contract provides for a date for completion of the works, but the employer through its acts or omissions prevents the contractor from achieving that date and there is no entitlement to extension of time under the contract in such event, the time for completion in the contract is nullified. This in turn means that the employer loses his right to levy liquidated damages and, whilst the contractor's obligation to complete the works remains, he must do so only within a reasonably time.
>
> (Alam-Eldin, 2010)

In both legal systems, the party with the pro-active approach (i.e. the one which flags events with potentially adverse impacts on quality, time, price, is timely in notifying and submitting their claims and being inclined to solve complications timely), being in good faith, must always be protected in case of a dispute.

It is rare for sample forms of contract to deal with time-related issues sufficiently. On the other hand, it seems not to be appropriate to impose too complicated requirements for time management on international construction contracts where, sometimes, the participants are not prepared to fulfil such requirements and the practical effect would be that nobody would use the contractual procedures in practice. It would no doubt be welcomed by international construction practitioners to have detailed guidance on time-related issues (time programme, time at large, concurrency, float, and so on) in materials such as the *FIDIC Guidance for the Preparation of Particular Conditions* or *FIDIC Contracts Guide* to establish international best practice in this area.

7.7 Concurrent delay

It is not uncommon for both parties to be in delay simultaneously. Frequently, the issues of concurrent delays are not covered in detail by governing law or in the contracts.

The mentioned 'prevention principle' typical of common law is mirrored in the civil law as 'concurrent delay'. For example, *The Czech Commercial Code* established rules for the default by a debtor in Section 365. The same rule is contained in the *New Czech Civil Code* at § 1969. Under this body of law: 'the debtor is not in default if he is unable to perform his obligation due to default by the creditor'. Default by a debtor and a creditor are fully regulated by the provisions of *The Czech Commercial Code*. The provisions at Section 365, which define default by the debtor, are mandatory. Similar provisions are contained in the majority of civil codes around the world.

The same principle can be found in Polish law. A practical example is the recent case (I CSK 748/12) where the Polish High Court (last instance court in Poland) confirmed that contractual penalties imposed on the contractor after a delay caused by the employer are not acceptable for being in conflict with the principle that a debtor cannot be in delay if the creditor is in delay.

The purpose of the prevention principle is similar. If the employer caused a delay, it would be inequitable to enforce delay damages where the contract either has no mechanism for extending the completion date, or that mechanism has become inoperable.

In the above-mentioned case no. 310/202 Ad Hoc, the arbitrators stated:

> It is accepted in all international construction contracts that: (a) whereas it is the duty of the contractor to do what the contract requires to be done (as designed and specified by the employer), the employer shall allow the contractor to do that which is to be done without hindrance; and (b) a party cannot benefit of its breach to the detriment of the injured party.

In no way can the above-mentioned general regulation in both the common law and the civil law be seen as sufficient guidance for all the numerous time-related issues encountered in the daily practice of construction projects.

Research by Jacob C. Jorgensen (2010) in cooperation with construction law experts in 12 different jurisdictions around the world (both common and civil law countries were represented) produced interesting outcomes. The authors analysed and responded to the same ten questions regarding the interpretation and application of delay clauses under the laws of their respective countries. It is, for instance, interesting to see that the important issues of concurrent delays and ownership of float have seemingly not been regulated in any of the countries. England is apparently the only jurisdiction where an attempt has been made to regulate these issues in the *Delay & Disruption Protocol* published by the *Society of Construction Law*.

Delay clauses in different jurisdictions by Jacob C. Jørgensen (Denmark)

In 2010, I finished a research project in cooperation with construction law experts in 12 different jurisdictions across the world. Both common and civil law countries were represented. The respondents analysed and responded to the same ten questions regarding the interpretation and application of delay clauses under the laws of their respective countries. In addition, the respondents highlighted the pitfalls and advantages one should be aware of when dealing with a standard construction contract, such as the 1999 FIDIC Red Book, governed by the law of their respective countries. It is, for instance, interesting to see that the important issues of concurrent delays and ownership to float have seemingly not been regulated in any of the standard contracts used in the 12 jurisdictions examined. England is apparently the only jurisdiction where an attempt has been made to regulate these issues contractually in the Delay & Disruption Protocol published by the Society of Construction Law. In my view, further legal research in respect to these particular issues would be welcomed. It is also interesting to observe how the laws of virtually all of the jurisdictions (though they all claim to protect the parties' right to contractual freedom), levy a remarkable amount of restraint on the employer's right to claim liquidated damages even though the contract in most cases clearly provides for this. Under Danish law, for example, the employer is not allowed to claim liquidated damages for interim delays and liquidated damages cannot be claimed if the employer fails to give notice, even though the contract does not impose any notice requirement. The well-known common law 'genuine pre-estimate rule' has been adopted by a number of civil law jurisdictions including Germany, China and Switzerland, where it exists in the form of rules limiting the amount of liquidated damages to a percentage of the contract sum.

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The SCL Protocol also defines several key rules for concurrent delay stating that a true concurrent delay is 'the occurrence of two or more delay events at the same time'. One is an employer risk event, the other a contractor risk event – the effects of which are felt at the same time. Such a 'true' concurrent delay will occur only rarely. For example, at the beginning of the project where lack of site access is caused by the employer and lack of mobilization is caused by the contractor.

Where contractor delay to completion occurs concurrently with employer delay to completion, the contractor's concurrent delay should not reduce any extension of time due. Furthermore, if the contractor incurs additional costs that are caused both by employer delay and contractor delay, then the contractor should only recover compensation if they are able to separate the additional costs caused by employer delay from those caused by contractor delay.

Concurrency is a cause of problems for both the contractor (who must prove and calculate a difficult claim) and the employer (whose liquidated damages entitlement may be challenged by a claim for an extension of time). It is also a complex situation for the contract administrator because deciding on responsibility remains a grey area.

A different approach was encountered in ICC case no. 10847 (2003) (ICC, 2012) where the contractor claimed an extension of time and additional costs due to alleged late issue of design drawings for a power station. While the contractor admitted that it was responsible for overlapping delay (in excavating the power station complex), it claimed that such concurrency should not affect the contractor's entitlement to an extension of time arising from delays attributable to the employer. The tribunal dismissed the contractor's claim on the basis of the contractor's pre-existing delay in the power station excavation works which were on the critical path. The tribunal did not subscribe to the view that an event that caused no delay to an activity on the critical path to the date for completion of the works can form the basis for an extension of time.

The principal problem with concurrency is that it leads to logical difficulties in applying simple concepts of causation. Very often, the underlying factual position will eliminate competing causes. However, causative events of the same potency (but with different parties being responsible for each one) will still remain. One particular problem is the absence of a consensus on the method of analysis. This applies both to the method of delay analysis and to the legal analysis of the consequences. The SCL Protocol sets out the following types of analysis that can be used: as-planned versus as-built, impacted as-planned, collapsed as-built or time impact analysis. While a method can be found that will support a case either for the contractor or the employer, the difficulty will be in predicting, objectively, the likely outcome of the case, since there is no single approach that the tribunal will follow. Self-evidently, this represents a problem for the tribunal as well as a risk for the parties (Ramsey, 2006).

7.8 Disruption

Disruption can be defined as any change in the method of performance or planned work sequence contemplated by the contractor at the time the bid was submitted

that prevents the contractor from actually performing in that manner. This material alteration results in increased difficulty and cost of performance (Cushman, 2011).

According to the SCL Protocol, disruption (as distinct from delay) is a disturbance, hindrance or interruption to a contractor's normal working methods resulting in lower efficiency. If caused by the employer, it may give rise to a right to compensation either under the contract or as a breach of contract. Disruption *may* lead to late completion, but not always. It is possible for work to be disrupted and for the contractor to perform the contract on time. In this situation, the contractor will not have a claim for an extension of time, but it may have a claim for the cost of the reduced efficiency of its workforce.

Standard forms of contract and governing laws do not usually deal expressly with disruption. If they do not, then disruption may be claimed as being a breach of the term generally implied into construction contracts (via the governing law), namely, that the employer will not prevent or hinder the contractor in the execution of its work (the SCL Protocol). In the majority of disruption evaluation cases, global and concurrent claims are unavoidable. Disruption evaluation is difficult as is the establishment of some universal rules for disruption evaluation. Case law in the common law systems has led to the establishment of best practice (e.g. via the mentioned SCL Protocol). Such best practice guidance helps to find fair solutions.

There is no universally accepted method of disruption analysis (see Chapter 10 for details). In civil law countries, there is usually no best practice guidance at all and the parties and judges rely on expert and auditor reports. In civil law countries it is usually better to build up the disruption claim using direct cost evidence and contemporary records. However, this is sometimes impossible. Furthermore, the approach of judges in civil law litigation is often unforeseeable because they often do not have experience of complex construction disputes. Thus, there is no reason to refuse common law best practice in international construction projects or disputes in adjudication, arbitration or litigation.

7.9 Time for completion under FIDIC forms

In terms of time-related issues, FIDIC forms are based on the Anglo-Saxon tradition. Parties usually agree on the time for completion in the appendix to tender or particular conditions. According to Sub-Clause 8.1 (of FIDIC forms in 1999 First edition), the time for completion shall start running when the engineer gives the contractor not less than seven (7) days' notice of the commencement date. Unless otherwise stated in the Particular Conditions, the commencement date shall be deemed to be 42 days after the contractor receives the letter of acceptance. The contractor shall commence the execution of the works as soon as reasonably practicable after the commencement date and shall then proceed with the works with due expedition and without delay.

As per Sub-Clause 1.1.3.3, time for completion means the time for completing the works or a 'section' (as the case may be) under Sub-Clause 8.2 and as stated in the appendix to tender. Any extension under Sub-Clause 8.4 is calculated from the commencement date. If the contractor fails to comply with the time for completion, the employer shall have the right to claim delay damages under Sub-Clause 8.7.

Should the failure to comply with the time for completion be compromised for a reason on the employer's side, the contractor shall have the right to claim an extension of time for completion, see Chapter 10.

This approach originates in English law, i.e. when the employer's delay influences time, it triggers a contractor option (by contract) to claim an extension of time for completion. Time is therefore 'of the essence'. If the contract does not contain these options to claim, then time is not of the essence, implying that the employer shall not have any option to claim delay damages.

The very core of claims for an extension of time for completion is to allow the contractor to be relieved of their liability for delay damages and also to make it possible for the employer to have the time for completion (including the final date and/or milestones) retained with the option to claim delay damages if the claim for an extension of time for completion is notified and then accepted. In the event that the employer (the engineer under FIDIC forms) fails to proceed in compliance with the contract (i.e. not responding to the contractor's claims and so on), time is not deemed as being of the essence and is perceived as being 'at large'. Delay damages must be perceived, in principle, as a limitation of delay liability, and never as any kind of contractual penalty. FIDIC forms do not allow for milestone provisions and/or milestone damages. An agreement on performance in sections is foreseen instead. According to FIDIC, it is up to the contractor on how to plan and execute their works. Sanctions for delay extending beyond milestones shall be applied even when the time for completion is kept. Such practice is not in compliance with an overall concept of the FIDIC contract and contains limitations as to the contractor's possibility to execute the works in compliance with the contract. Evidence of complexity and uncertainty in enforcing contractual penalties can be seen, for example, in German courts which have acknowledged contractual penalty provisions as valid if they do not exceed 0.2 – 0.3 % of the contract price per day (Jaeger and Hök, 2010).

7.10 Time programme under FIDIC forms

According to the Sub-Clause 8.3 (FIDIC CONS/1999 Red Book and P&DB/1999 Yellow Book), the contractor shall submit a detailed time programme to the engineer within 28 days of receiving the notice of commencement of works. The contractor shall also submit a revised programme whenever the previous programme is inconsistent with actual progress or with the contractor's obligations. Sub-Clause 8.3 defines what information the programme should include. Apart from defining the methods the contractor intends to adopt in the execution of the works – including the anticipated timing of each stage of design, the contractor's documents, the procurement, the manufacture, the delivery to site, the construction, the erection and the testing, the description of the nominated subcontractors' assignments, sequence and the timing of inspections and tests – the programme should also include a supporting report with a general description of the methods (processes) which the contractor intends to use, the major stages (in the execution of the works) and details showing the contractor's reasonable estimate of the number of each class of contractor personnel and each type of contractor equipment required on site at each major stage.

The time schedule should also give a description of methods of construction and allocation of resources, and include a form highlighting links between individual activities.

The SCL Protocol recommends that the programme should clearly identify all relevant activities, including those that relate to design, manufacturing, procurement and on-site construction. It should also record the information the contractor reasonably requires from the employer or contract administrator, what that information is, when it is required and all employer and contract administrator activities and constraints (such as approvals and employer-supplied services or materials).

The purpose of the programme is to monitor progress and, therefore, to facilitate the comparison of the submitted programme against the reality on site to enable it to be updated accordingly. According to Sub-Clause 8.3 unless the engineer (within 21 days of receiving a programme) gives notice to the contractor stating the extent to which they do not comply with the contract, the contractor shall proceed in accordance with the programme, subject to their other obligations under the contract. The engineer also has the right to prompt the contractor to revise the programme if they fail to comply with the contract or if actual progress is inconsistent with the contractor's stated intentions.

This obligation, however, is closely tied with other contractor's obligations – particularly those under Sub-Clauses 8.3, 4.21 (h) and 8.6. It is primarily (according to Sub-Clause 8.3) the obligation of the contractor to promptly give notice to the engineer of specific, probable future events or circumstances which may adversely affect the work, increase the contract price or delay the execution of the works. The engineer may require the contractor to submit an estimate of the anticipated effect of the future event or circumstance, and/or acceleration proposal under Sub-Clause 13.3.

As per Sub-Clause 4.21 (h), the contractor should submit to the engineer in their progress report the comparisons of actual and planned progress, with details of any events or circumstances which may jeopardize the completion in accordance with the contract and the measures being (or to be) adopted to overcome delays.

In this context, Sub-Clause 8.6 rules that if actual progress is too slow to complete within the Time for Completion, and/or progress has fallen (or will fall) behind the current programme (other than as a result of a cause listed in Sub-Clause 8.4, i.e. the events upon which the contractor may claim an extension of time for completion), then the engineer may instruct the contractor to submit a revised programme and supporting report describing the revised methods which the contractor proposes to adopt in order to expedite progress and comply with the contract.

Sub-Clause 8.6 further states that unless the engineer notifies otherwise, the contractor shall adopt these revised methods, which may require increases in the working hours or in numbers of contractor personnel or goods, at the risk and cost of the contractor. Unless the time for completion is extended based on events where risk is allocated to the contractor, the engineer may proceed per Chapter 13 and instruct the contractor to expedite (accelerate) under Sub-Clause 13.1 f), or request a proposal under Sub-Clause 13.3 that states that:

> If the engineer requests a proposal, prior to instructing a variation, the contractor shall respond as soon as practicable, either by giving reasons why they cannot comply or by submitting a description of the proposed work to

be performed and a programme for its execution, a proposal for any necessary modifications to the programme as per Sub-Clause 8.3 (and to the time for completion) and a proposal for evaluation of the variation.

The engineer shall, as soon as practicable (after receiving such proposal), respond with an approval, disapproval or comments, provided that a variation is to be evaluated in compliance with Chapter 12 (Measurement and Evaluation) unless the engineer instructs otherwise. Any additional instruction to accelerate may imply a variation. However, if the contractor decides to accelerate in order to comply with their obligations in accordance with the contract (mainly to proceed in line with the current programme), the contractor shall also bear all related additional cost.

A lack of realism in negotiations by James Bremen (UK)

Often employers will put extremely challenging programmes out to bid. Contractors bid for these programmes and the employers assume that this is proof that the programmes are achievable. That is usually an incorrect assumption. Instead, bidders do not wish to be disqualified and as a result will bid for work in a compliant manner, betting on the prospect that they can rely on the employer's actions, and inadequacies in the scope and the specification to escape the programme. Beginning without a common understanding of the programme is a relatively common feature of emerging markets projects, and one that can be easily overcome by better preparation on the employer side of realistic programmes, and having a strong employer-side planning team.

Employers often operate under very onerous internal decision-making protocols, which result in delayed decision-making, payment times and approvals for contractors. Negotiators are aware of these impediments, but often fail to address them in the contracts, instead adopting market-norm positions. When these issues are then encountered during the contract execution phase, contractors will use them as a strong basis for claims and an increase in the contract sum.

These few examples are ones that can (and should) be addressed by emerging market governments in improving their approach to procurement. Often their projects are very significant and represent large capital expenditures. Thus it makes sense to really focus on structuring the procurement and the contract in a manner to ensure project success.

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7.11 Delay and suspension under FIDIC forms

Contracts for works in large construction projects usually deal with delays, suspensions and termination of contract and related consequences. Details of mentioned issues and how they are dealt with under FIDIC forms are discussed below.

7.11.1 Delay under FIDIC forms

FIDIC forms distinguish between delays caused by employer risks events (i.e. the delays that authorize the contractor to claim an extension of time for construction according to the individual Sub-Clauses (8.4 and 8.5 in general)) and delays caused by contractor risks events authorizing the employer to claim delay damages.

Delay damages are one of the types of liquidated damages. In the Anglo-Saxon tradition of law, liquidated damages consist of the sum identified as such by the contracting parties in the contract. The purpose of this sum is to ensure that the party suffering damage due to the other party's breach of contract receives pre-determined compensation. If this compensation issue is not dealt with in the contract, a court will determine if these damages (damages at large) are justified or their quantum. According to common law principles, liquidated damages shall not be enforceable if their purpose is to punish rather than compensate. In equity, judges strive for a fair resolution and avoid enforcing conditions that lead to unjust enrichment. However, compliance with two conditions will allow the use of liquidated damages: (1) The sum must at least (approximately) correspond to potential damage; and (2) the probability that damage will ensue must be sufficiently low. When dealing with construction projects, the courts will sometimes refuse enforcement of such compensation, referring to the *Doctrine of Concurrent Delay* if there is evidence of shared responsibility for such a delay.

7.11.2 Practical recommendations for EOT claims

When dealing with delay under the FIDIC forms (and with every claim in general) it is recommended to notify the event within 28 days as required by Sub-Clause 20.1 to avoid the claim being time-barred. It is further recommended to do the following:

- Link the event to a Sub-Clause that entitles the contractor to an extension of time.
- Immediate collection of contemporary records (Sub-Clauses 6.10, 4.21, 8.3) and weekly programme review meetings with the engineers to explain the event notification (this may be before the notice is sent).
- Afterwards, the initial claim submission (quantification) must be submitted to the engineer within 42 days of becoming aware and updated monthly.
- An adequate number of experienced staff must be employed to manage claim submissions. Therefore, it is useful to 'walk' the engineer through the initial submission with a short presentation and arrange a meeting with the engineer's programme manager. Mitigation solutions should be prepared in mutual cooperation.
- Communication helps to find solutions so it is efficient to schedule review meetings with the engineer during their 42-day reply period. If there are some 'no blame' events causing the claim, it is good to agree on them (e.g. unforeseen ground conditions). If the engineer's response is positive, it may be useful to request a meeting with the employer to reach an overall agreement. To control the impact on cost, it is worthwhile to prepare a monthly up-dated schedule to show the running cost of prolongation.

- If the engineer's response is negative, it is recommended to meet immediately with the engineer and find out if the difficulty lies in the facts, principle, liability, cost, and so on. Afterwards it is good to continue dialogue with the engineer with a focus on alternative no blame events.
- If the engineer is directed by the employer, it is necessary to meet with the employer immediately to find out what is the cause of this difference (i.e. facts, principle, liability, cost or political reasons). In this phase it is still worth continuing dialogue with presentations to the employer including alternative proposals for 'no blame' events and mitigation solutions.
- If resistance continues, it is necessary to start putting pressure on the engineer and employer to update claims in monthly applications for payment plus finance charges. If there is no agreement at this stage, it is necessary to commence correspondence referring to the engineer/employer's failure to fulfil obligations under the contract (lack of decision, instruction, cooperation and obstructive practice causing further damages).
- A request by the contractor under Sub-Clause 3.5 asking for the engineer's determination may follow. This could help as a precursor to a referral to the dispute adjudication board (Sub-Clause 20.2).
- If there is consistent non-acceptance of all time claims for political reasons it may be necessary to issue a 14-day notice under Sub-Clauses 16.1 and 16.2(d) because the employer substantially is failing to perform their obligations under the contract as a precursor to a termination notice by the contractor (or a similar instrument based on the governing law).

7.11.3 Suspension of work under FIDIC forms

Employer suspension

FIDIC forms also establish rules for suspension of realization. In general, as defined in Sub-Clause 8.8, the engineer may, at any time, instruct the contractor to suspend progress of part or all of the works. If the suspension is for a reason other than on the contractor's side, then:

- the contractor may notify a claim under Sub-Clause 8.9;
- if the suspension continues for more than 84 days, the contractor may request permission to proceed;
- if the engineer does not give permission to re-start within 28 days, the contractor may terminate the contract.

Contractor suspension

The contractor may suspend (or slow down) work as per Sub-Clause 16.1 until the situation is remedied if the employer fails to properly and timely meet their payment obligations or fails to prove that they are able to provide sufficient funding for the work. As per Sub-Clause 14.8, the contractor is entitled to payment of the financing charges in this case. Under Sub-Clause 16.1 the contractor (after giving not less than 21 days' notice) may suspend or reduce the rate of work unless and

until the employer's breach of contract is eliminated. The contractor shall resume normal working activities as soon as is then reasonably possible.

If the contractor suffers delay or incurs costs as a result of suspending work or reducing the rate of work, the contractor shall give notice to the engineer and shall be entitled to compensation (subject to an extension of time) for any such delay if completion is or will be delayed, and payment of any such cost plus reasonable profit, which shall be included in the contract price.

Suspension (especially in cases of fully mobilized construction works) will lead to damages and claims and parties should do all they can to avoid it. It is common that claims are followed by counterclaims and concurrent delay is encountered. Contractor claims are typically for additional payment because of demobilization (or stand-by labour and equipment), costs connected with their duty to protect, store and secure the works against any deterioration, loss or damage, remobilization expenses, prolongation (or acceleration) disruption, and so on. The employer may then claim damages pointing out contractor concurrent delay.

A suspension may be a part of a complex delay and disruption claim. An interesting example is case no. 469/2006 Ad Hoc (final award dated 26.2.2007) decided in international construction arbitration at the *Cairo Regional Centre for International Commercial Arbitration*. This case involved a dispute between a Swedish and an African company in consortium (the contractor) and an African gas company (the employer) resolved under Egyptian civil law (using the FIDIC forms) before a Jordanian Chairman with two members from the UK and Egypt.

A contractor claimed an additional payment and extension of time on the basis of late site possession and because some employer risks (such as debris) had materialized and disrupted the dredging works. The employer argued that the site was handed over on time.

Another contractor's EOT claim was on the basis of adverse climatic conditions encountered as a consequence of the previous delay caused by the employer (shift to a less favourable season). The contractor also claimed *force majeure* events (one of them being the death of a member of its crew that delayed the works). All claims were refused by the employer which then counterclaimed extensive damages and liquidated damages and 'called' the performance guarantee.

Furthermore, during realization, the engineer instructed the contractor to mobilize an alternative dredger to complete the suspended dredging works. The contractor considered the engineer's instruction a variation arising as a result of the employer's various breaches of contract.

The tribunal held that the contractor was entitled to an extension of time and dismissed the employer's claim for damages and liquidated damages. The tribunal further held that the contractor was entitled to the reasonable costs of mobilizing the alternative dredger. In order to prove such costs, the contractor submitted, as evidence, a document containing details of the costs. After reviewing the evidence, the tribunal calculated the sum of costs but expressly excluded the following items as irrelevant: petty cash, accommodation, taxi expenses, flights, hotels (being internal costs) as well as time on site, charges for survey staff, gasoil, agency fees and flight costs for an expert (being external costs).

The tribunal finally allowed the contractor's EOT and additional payment claim (with some deductions as described above), rejected the employer's claims for

damages and liquidated damages and ordered the return of the performance guarantee (Alam-Eldin, 2010).

7.12 Contract termination under FIDIC forms

FIDIC forms foresee termination of the contract:

- by the employer (based on contractually given reasons at Sub-Clause 15.2);
- by the contractor (based on contractually given reasons at Sub-Clause 16.2);
- for the employer's convenience (Sub-Clause 15.5); and
- by termination by one of the contracting parties after a *force majeure* event (Sub-Clause 19.6).

7.12.1 Employer termination

As per Sub-Clause 15.2, the employer shall be entitled to terminate the contract upon giving 14 days' notice if the contractor does any of the following:

- fails to provide performance security or to comply with the notice to correct (under Sub-Clause 15.1 if the contractor fails to carry out any obligation under the contract, the engineer may, by notice, require the contractor to make good the failure and to remedy it within a specified reasonable time);
- abandons the works or otherwise plainly demonstrates an intention not to continue performance of their obligations under the contract;
- without reasonable excuse fails to proceed with the works in accordance with Clause 8 (Commencement, Delays and Suspension) or to comply with a notice issued under Sub-Clause 7.5 (Rejection) or Sub-Clause 7.6 (Remedial Work), within 28 days of receiving it;
- subcontracts the whole of the works or assigns the whole contract without required agreement/consent;
- becomes bankrupt or insolvent;
- gives or offers to give (directly or indirectly) to any person any bribe in connection with the contract.

The employer may then notify their claim under Sub-Clause 2.5 and withhold payments until full indemnification and clarification of consequences are received. In the recent case (under FIDIC P&DB/1999 Yellow Book) Obrascon Huarte Lain SA -v- Her Majesty's Attorney General for Gibraltar [2014] EWHC 1028 (TCC) the judge dealt with many aspects of employer termination under the Sub-Clause 15.2 (including the notice to correct under the Sub-Clause 15.1). The judge said for example that Sub-Clause 15.1 relates only to more than insignificant contractual failures by the contractor (such as a health and safety failure, bad work or serious delay on aspects of the work), which he said must be an actual failure to comply with the contract rather than something that may have not yet become a failure. Furthermore the judge said that the time specified for compliance in the Sub-Clause 15.1 notice must be reasonable in all the circumstances at the time of the notice. The

judge gave the example that if 90% of the workforce had gone down with cholera at that time, the period given for compliance would need to take that into account, even if that problem was the contractor's risk. He said that whether the notice came of the blue or if the subject matter had been raised before and the contractor had chosen to ignore what it has been told might also be relevant. To understand the difficulties of an employer contract termination in case of lack of contractor due diligence see Sabic UK Petrochemicals Ltd v Punj Lloyd Ltd [2013] EWHC 2916 (TCC).

7.12.2 Contractor termination

As per Sub-Clause 16.2, the contractor shall be entitled to terminate the contract on 14 days' notice if:

- the contractor does not receive evidence within 42 days of giving notice under Sub-Clause 16.1 (contractor's entitlement to suspend work) in respect of a failure to comply with Sub-Clause 2.4 (to give evidence about the employer's financial arrangements);
- the engineer fails, within 56 days after receiving a statement and supporting documents, to issue the relevant payment certificate (within 28 days in general as per Sub-Clause 14.6);
- the contractor does not receive the amount due under the interim payment certificate within 42 days of the expiry of the time stated in Sub-Clause 14.7 (payment) within which the payment is to be made [except for deductions in accordance with Sub-Clause 2.5 (employer's claims)];
- the employer substantially fails to perform their obligations under the contract;
- the employer fails to comply with Sub-Clause 1.6 (i.e. fails to enter into the contract within 28 days after receiving the letter of acceptance) or with Sub-Clause 1.7 (assignment);
- a prolonged suspension affects the whole of the works as described in Sub-Clause 8.11 (prolonged suspension);
- the employer becomes bankrupt or insolvent.

The contractor will then receive payment mainly for what has been performed, and, moreover, for lost profit or damage suffered as a result of termination.

7.12.3 Termination in convenience

As per Sub-Clause 15.5, the employer shall be entitled to terminate the contract at any time for their own convenience by giving notice of such termination to the contractor. Termination shall take effect 28 days after the later of (1) the dates on which the contractor receives this notice or (2) the employer returns the performance security. The employer shall not terminate the contract under this Sub-Clause in order to execute the works themselves or to arrange for the works to be executed by another contractor. The contractor will then receive payment mainly for what has already been performed and, moreover, for all costs incurred in expectation of works to be completed. The FIDIC Contracts Guide's position on this provision is that it can be problematic and contrary to governing law.

7.12.4 *Force majeure* termination

If, as under Sub-Clause 19.6, the execution of substantially all the works in progress is prevented for a continuous period of 84 days by reason of *force majeure*, or for multiple periods which total more than 140 days, then either of the parties (the employer or the contractor) may give a notice of termination to the other one. In this case, termination shall take effect seven (7) days after notice is given.

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8 Variations

8.1 Variation clauses

No large construction project is ever perfectly prepared, designed, engineered, managed, supervised and performed. Therefore, well-drafted variation clauses that describe necessary processes of variation management and respective knowledge of these processes by construction project participants are key factors to a successful project.

Variations can have major impacts on costs and time. Construction project participants must therefore know their respective rights and duties regarding variation management. Sample contract forms for large construction projects regularly contain clauses that allow the employer to vary, unilaterally, the scope, quality, sequencing, methods or design of the works. In the same way, the contractor can propose such variations, if there is a need for such variation or if a variation can improve the works.

In construction, the term 'change' is sometimes perceived as synonymous with the word 'variation'. For the purposes of this book, the term 'variation' will be used. The word 'change' will be used in a different context to mean 'substantial or significant change' of works. The latter is not allowed under public procurement law in many jurisdictions.

Various reasons are quoted for initiating variations. These include:

1. External grounds (outside the influence of the parties) such as:
   - Changed conditions and circumstances (weather, floods, earthquakes, legislative terms, and so on).
   - Uninformed or unrealistic expectations or conditions that differ from those actually encountered – such as unforeseeable ground conditions (of geological/hydrological nature or utilities). The physical on-site conditions in general may differ in material terms from those 'foreseen' in the contract. Physical conditions encountered on site may also differ from those normally encountered on similar sites within a particular region.

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- Archaeological findings.
- Interference by state authorities.

2. Interest in improvement of the work during realization such as:
   - Technical innovations (and related time and cost savings), acceleration and so on.
3. Employer's default such as:
   - Errors of a technical nature in contractual documents. Defective and inadequate documents are the primary source of variations; drawings and specifications are often found to be defective and inadequately describe the nature and scope of the work.
   - Inefficient cooperation of particular contractors and employer's representatives (bad on-site coordination).
   - Lacking instructions, site access and permissions, insufficient funds leading to suspension and so on.
4. Contractor's default such as:
   - Lack of due performance caused by the ignorance of on-site conditions, ignorance of local specifics, ignorance of contract and so on.

Variations are sometimes perceived as negative because of corresponding cost overruns; however, the frequent use of variation provisions in good contracts confirms the inevitable nature of variations in every construction project.

Variation procedures cannot run smoothly without properly formulated contractual provisions to regulate them. In general, these provisions define the procedures the contracting parties must follow to implement a variation in compliance with the contract. The following issues are usually addressed:

- Options and scope of variations to be mandatorily executed by the contractor as instructed by the employer, including the formal procedure for giving instructions and potential contractor responses.
- Process to be followed in preparing the design and method statements for new or different works.
- Impact on cost and time.
- Requirements and deadlines for notifications that must be sent to the employer by the contractor for proper and timely realization of the variation.
- Timeframe within which the contractor must submit the variation proposal.
- Timeframe within which the employer must evaluate the contractor's proposal and give instructions.
- Clear identification of persons authorized to instruct and execute variations.
- Sample variation sheets and forms (variation orders).

Variation procedures are often accompanied by requirements for formal early warnings and notices of pending hazards with impact on time for completion and additional cost. Delay, disruption, suspension and acceleration of works may be caused by the employer's ill-considered instruction. Likewise, the employer must also be timely notified by the contractor of the consequences of the employer's defective activity or inactivity or negligence to be able to remedy such a situation in the most

efficient and timely way. Therefore, employers and contractors need to effectively cooperate and communicate to mitigate the likelihood of any adverse variations and their impacts.

8.2 Variations under FIDIC forms

Not even the FIDIC forms can avoid the issue of variations and adjustments. According to the FIDIC CONS/1999 Red Book and P&DB/1999 Yellow Book (see Chapter 12), the authorization to give variation instructions belongs to the engineer while it applies that 'Variations may be initiated by the engineer at any time prior to issuing the taking-over certificate for the works, either by an instruction or by request for the contractor to submit a proposal.'

The engineer's competences regarding variations tend to be limited in the engineer's contract with the employer. In the event of variations that affect the price or time for completion, for example, a limitation is that the engineer must first obtain the employer's prior consent before proceeding.

In general, the contractor does not need to verify if prior consent of the employer has been issued to the engineer. Whenever the engineer gives instruction beyond the scope of its authorization, the engineer is deemed to have received such consent.

The employer must consider thoroughly if, and to what extent, they really want to intervene and limit the engineer's responsibilities. If the employer needs to control and substantially supervise the engineer by requiring prior consent for the engineer's numerous decisions, the employer must have the human resources available to make quick and competent decisions and to assume a broad scope of responsibility. A delay on the part of the employer (the engineer) may occur where the review and approval procedures used (e.g. to approve the detailed design, method statements, etc.) are inflexible and unreasonable. In cases of delayed instruction, the contractor may claim an extension of time for completion and additional payment in the form of cost, overhead and profit (subject to Sub-Clause 1.9 of the FIDIC CONS/1999 Red Book). If the engineer is unable to duly perform their duties because of limitations on the employer's side, then such an engineer is a great hazard to a construction project.

Variations are primarily carried out as instructed by the engineer. There are, however, certain limitations for variations which can only fall into any of the following categories (in accordance with the FIDIC CONS/1999 Red Book):

- changes to the quantities of any item of work included in the contract (however, such changes do not necessarily constitute a variation);
- changes to the quality and other characteristics of any item of work;
- changes to the levels, positions and/or dimensions of any part of the works;
- omission of any work unless it is to be carried out by others;
- any additional work, plant, materials or services necessary for the permanent works, including any associated tests on completion, boreholes and other testing and exploratory work, or
- changes to the sequence or timing of the execution of the works.

Concerning the variation procedure, it is stipulated that the engineer may (before giving an instruction to execute a variation) ask: (1) the contractor to give a description of the proposed work to be performed and a programme for its execution; (2) for the contractor's proposal for any necessary modifications to the programme and expected time for completion; and (3) the contractor's proposal for evaluation of the variation.

Such a procedure is appropriate as it can minimize future potential disputes where the effects of a variation on cost and time are not pre-agreed. The engineer must determine *ex officio* (by virtue of their position) the cost impacts caused by a variation instruction – without any other steps necessarily being taken by the contractor (such as to notify the claim).

According to FIDIC, the contractor may, at any time, submit to the engineer a written proposal which will (in the contractor's opinion) and, if adopted, accelerate completion, reduce the cost to the employer of executing, maintaining or operating the works, improve the efficiency or value to the employer of the completed works or otherwise be of benefit to the employer. The contractor will gain 50% in costs savings as a bonus should the realization be successful (under FIDIC CONS/1999 Red Book).

8.3 Claims related to variations

The employer usually has the right to order the contractually defined and allowed variations. The contractor, in contrast, has the right to compensation in terms of time and price.

In most cases, variations are managed smoothly via the agreed variation orders.

The position of the SCL Protocol (the Delay and Disruption Protocol published by the United Kingdom Society of Construction Law) on valuation of variations is that (where practicable), the total likely effect of variations should be pre-agreed between the employer/contract administrator and the contractor: (1) to arrive, if possible, at a fixed price of a variation; (2) to include not only the direct costs (labour, plant and materials) but also (3) the time-related costs, an agreed extension of time and the necessary revisions to the programme. A complication often appears where one of the parties is breaching the contract or where contractual interpretation is unclear. In such a case, a routine variation procedure may become a claim for an additional payment and/or extension of time for completion.

In France, for example, the contractor is entitled to an extension of time for completion (*prolongation du délai d'exécution*) and financial compensation (*indemnisation*) if there is a modification in the quantity of works or new works are instructed to be performed both in private and public procurement projects (Wyckoff, 2010).

To distinguish the contractor's individual claims for additional payment or for an extension of time for completion as a result of a variation, the following situations can be defined:

- directed variation;
- constructive variation;
- voluntary variation.

8.3.1 Directed variation

A variation instruction given by the employer (or on their behalf in compliance with the contract) is a directed variation usually taking the form of a written instruction negotiated in a variation order. It may also take the form of an express instruction given orally or implied by conduct. Directed variations are usually issued in compliance with a particular provision in the contract.

These contractual provisions define allowed variations, the period of time within which the contractor should respond to an instruction, the variation design and the approval procedures, the range of additional costs that can be compensated, the pricing method, the specifications of the impact on time and/or other formal procedures. An agreement on price and the time impact of a particular variation will be the key aspects of a successful variation.

If there is enough time, the employer will often proceed by asking the contractor for a variation proposal. The contractor will evaluate the required variation's influence on the time for completion and price of work. The contractor will then respond within the period of time determined in the contract by providing the proposal, with an evaluation of the feasibility of the variation, including design, impact on the time for completion, and price of work.

This will typically be achieved in a formal manner through a variation order (sample sheet or form). The employer will confirm the variation order, which then becomes an addendum to the contract once a consensus is achieved between the employer and the contractor.

8.3.2 Constructive variation

Constructive variations are defined as any employer conduct that will not result in any directed variation (a formal variation order) but, as a result of which, the employer will require the contractor to carry out different work to that defined in the original contract.

For example, testing and surveillance, implementing higher standards or better workmanship, unjustified refusal to take over the works, performance obstacles and the like. Constructive variations need not influence the technical solution, design or amount of work. They may, for example, include a variation to methods of realization which is then, subsequently, reflected in price or time programme changes. A change in sequencing of operations as instructed by the employer is a classic example. This is discussed in further detail in Section 8.4.2, Constructive Acceleration.

Constructive variations tend to appear during realization of large construction projects. Such variations may be instructed orally but a contractor must be able to document and prove any potential claims for additional payments and extensions of time for completion. Therefore, the practice of confirming oral instructions in writing is appropriate in such a case. FIDIC forms state (Sub-Clause 3.3), for example, that when the engineer:

(a) gives an oral instruction;
(b) receives a written confirmation of the instruction, from (or on behalf of) the contractor, within two working days after giving the instruction; and

(c) does not reply by issuing a written rejection and/or instruction within two working days after receiving the confirmation, then the confirmation shall constitute the written instruction of the engineer.

Whenever the contractor's claims are in dispute, the judge, arbitrator or adjudicator may investigate whether: (1) the variation was outside the scope of a contractual obligation; (2) the variation was instructed by the employer; (3) if the employer agreed with the compensation; (4) if the necessity of the variation was not caused by a contractor's mistake; or (5) if the price increase and time impact claimed are adequate and reasonable. In this regard, it is very important to evaluate the potential impact of the governing law in every particular case.

The contract has to be taken as the basis from which variations are valued. It applies in general that either the bill of quantities of a given project, historical data from similar projects, new calculations of rates and prices or industry benchmarks will be used for appropriate valuation. An agreement on how to value a particular variation is then usually reached. Otherwise, retrospective evaluation approaches must be applied to the variation (often after a claim for additional payment is notified), based on actual documented direct costs and agreed surcharges (if any). Different approaches that compare the 'as-planned' and 'as-built' works need to be considered also. It is further possible to have the price determined by expert opinion, an expert witness or to use a method based on the rules of the unjust enrichment/*quantum meruit* (Latin for 'what one has earned') as per the governing law. If the right method is not found and/or agreed upon, the parties have to treat the variation as a dispute to be resolved in adjudication, litigation or arbitration.

8.3.3 Voluntary variation

A voluntary variation is a variation which is fully under the control and convenience of the contractor. A voluntary variation may be used to re-allocate capacities, make an impression on the employer, manage contractor delay, and so on. Furthermore, if carried out without proper records and without following the procedures under the contract on the contractor's side, a constructive variation may easily be deemed a voluntary variation.

8.4 Acceleration

It is often necessary, for various reasons, to speed up the construction process by increasing efficiency of related realization processes. Delay may result in significant damages for all participants of a particular construction project. Faster construction leads to increased use of material, labour and equipment or optimization of methods and processes. In other words, 'acceleration'. This specific variation deserves special attention.

The contractor and the employer (including the contract administrator) are generally obliged to mitigate delay and loss under the contract and the governing law. The position of the SCL Protocol is that the contractor has a general duty to mitigate the effect of employer risk events on its works. Unless expressly included in

contract wording or by agreement to the contrary, the duty to mitigate does not extend to requiring the contractor to add extra resources or to work outside its planned working hours. The contractor's duty to mitigate its loss has two aspects: first, the contractor must take reasonable steps to minimize their loss; and, second, the contractor must not take unreasonable steps that increase their loss.

Acceleration is encountered mainly in the following form:

- Changes to sequence and timing of works in progress.
- Increases in labour (e.g. more workgroups, overtime additional shifts or a combination of both).
- Use of additional equipment and machinery.
- Acceleration of deliveries of materials, products, plants and the like.

Acceleration can take one of three forms:

- directed;
- constructive;
- voluntary.

8.4.1 Directed acceleration

Directed acceleration takes place where the contractor is instructed directly, indirectly or even requested by the employer to speed up works according to the contract provisions for variation. The price of acceleration should be agreed upon before an instruction of directed acceleration is given. In case of a subsequent claim for additional payment, the contractor must show their endeavour to accelerate, the acceleration must really take place, and additional costs arise as a result of such acceleration.

8.4.2 Constructive acceleration

Constructive acceleration is encountered where there is a delay caused by the employer (after an employer risk event) and where the contractor has notified the employer of a claim for an extension of time for completion. The employer may then refuse this claim, insisting via an instruction or request, that in fact no delay has occurred and the works should be finished on time. The contractor may express disapproval and will show its endeavour to accelerate. The acceleration will take place and additional costs will arise as a result of such acceleration. Constructive acceleration is therefore a good procedural defence strategy against delay damages and contractual penalties.

The SCL Protocol defines constructive acceleration as:

> an acceleration following failure by the employer to recognise that the contractor encountered employer delay for which it is entitled to an extension of time for completion and which failure required the contractor to accelerate its progress in order to complete the works by the prevailing contract completion date.

This situation may be brought about by the employer's denial of a valid request for an extension of time for completion or by the employer's late granting of an extension of time for completion.

The SCL Protocol further states that where a contract provides for acceleration, payment for the acceleration should be based on the terms of the contract. Where the contract does not provide for acceleration but the contractor and the employer agree that acceleration measures should be undertaken, the basis of payment should be agreed upon before acceleration commences. The SCL Protocol does not recommend that a claim for constructive acceleration be made. Instead, prior to any acceleration measures, steps should be taken by either party to have the dispute or difference in entitlement to an extension of time resolved in accordance with the dispute resolution procedures stipulated in the contract.

The particular governing law will strongly influence the success of a constructive acceleration claim. It is therefore very interesting to compare the opinions of lawyers from different countries at http://globalarbitrationreview.com. They responded to the following questions:

- How does the law view 'constructive acceleration' in situations where the contractor incurs the costs of accelerating its works because an extension of time has not been granted that should have been?
- What must the contractor show for such a claim to succeed?
- Would your answer differ if the employer had acted unreasonably or in bad faith?

The following answers were given in particular jurisdictions.

- *Brazil*: In general, constructive acceleration increases contractor costs that should be borne by the employer if the contractor was somehow forced to comply with the original time frame, when a time extension should have been granted. In order to have a successful claim, the contractor must show that the works will be delayed unless acceleration occurs and that such delay would not be deemed a fault of the contractor. As for the employer's motivation, it does not matter if the act or omission was made on an unreasonable basis; however, if bad faith is proven, other costs derived from parallel damages, such as loss of profits, may also be claimed (Marcondes, Salla, Nakagawa, and Diniz at http://globalarbitrationreview.com).
- *England and Wales*: There is no objection (in principle) to a claim for constructive acceleration. Such claims are more easily made where there is no third-party certifier to administer extension of time claims. In such circumstances, the failure to allow a valid extension of time claim will usually be a breach of contract by the employer entitling the contractor to claim damages, which may include the reasonable costs of acceleration. Claims involving a third party certifier are, however, rarely successful. The fact that the contractor was entitled to extensions of time that was not granted to them does not on its own mean that the contractor can make a claim for constructive acceleration. It would be necessary to show that the employer or the certifier had acted in bad faith in that, knowing that the contractor was in fact entitled to an extension of time, they refused to grant one, with the intention of putting the contractor under pressure to accelerate (Choat and Long at http://globalarbitrationreview.com).

- *France*: There is no established set of rules dealing with the concept of 'constructive acceleration'. In order to succeed in its claim for additional costs resulting from acceleration measures, the contractor will need to argue that they had been forced to take those measures so as to avoid liquidated damages claims being made against them in the face of what potentially might have become an unachievable contract time for completion. Their claim is more likely to succeed if an instruction to accelerate can be implied from the employer's conduct (e.g. the threat of liquidated damages because the contractor was behind schedule). (Gillion and Rosher at http://globalarbitrationreview.com).
- *Germany*: Generally, the contractor has a stark choice to make between (1) whether to hope that they can prove the extension of time or (2) whether they should accept the (temporary) default and take steps to mitigate the damages. The contractor must show the general prerequisites of an extension of time claim (i.e. an event not caused by the contractor that caused a delay to the works schedule of the contractor). If the contractor has 'accepted' the fault temporarily, the contractor must also show that the steps it took to mitigate the delay were necessary and reasonable and how those costs incurred in connection are to be specified and quantified. If the employer acted unreasonably, a court or arbitral tribunal could ease the burden of proof on the contractor or even shift the burden of proof (in the event of bad faith) to the employer. Generally, though, a construction acceleration claim presents significant legal difficulties, because of which a disruption claim for the same facts may be more probable (Kremer at http://globalarbitrationreview.com).
- *Ireland*: The Irish courts have not yet had cause to determine whether a doctrine of 'constructive acceleration' exists in Ireland, nor do standard form contracts in Ireland expressly recognize the concept. However, where an Irish court is called upon to consider the issue, it is more than likely to follow the position in England and Wales, in which no definitive authority exists for constructive acceleration. However, under Irish law, should a contractor be forced to accelerate their works due to the fault of the employer, a contractor may be able to recover the costs of acceleration by:
  (i) a claim for loss and expense due to disruption (as distinct from delay costs), where the construction contract allows for recoverability of disruption costs;
  (ii) a claim for damages for breach of contract by the employer in failing to grant an extension of time to which the contractor was otherwise entitled to, including the contractor's costs of mitigation (the contractor must make reasonable attempts to mitigate their loss; where they do so, the costs of such mitigation are recoverable).

  A contractor may also be entitled to relief (as distinct from damages), under the prevention principle, in cases where some act of prevention by the employer puts time at large and the contractor's ability to complete by a specified date impossible (Killoran, O'Higgins and Cooney at http://globalarbitrationreview.com).
- *Korea*: A claim based on 'constructive acceleration' may be possible under general Korean law principles. However, there are no relevant court precedents to date. If the Korean courts were to accept a claim based on 'constructive acceleration', elements of proof would be similar to general principles of damages (Oh and Park at http://globalarbitrationreview.com).

- *South Africa*: Where a contractor experiences a delay, they generally have two options: (1) either to claim an extension of time or (2) to accelerate the works. In certain instances, the construction agreement may make provision for a process to agree to an acceleration instead of an extension of time and to calculate the costs that the contractor may claim in those circumstances. An acceleration and an extension of time claim are generally mutually exclusive. The contractor should therefore choose which remedy they prefer to exercise. Where a claim for an extension of time is chosen, that ought to be granted but is not, the contractor is required in those circumstances either to accept the determination and to bear the consequences or to place the determination in dispute and to seek a revision of the determination through the dispute resolution mechanisms of the contract. If the contractor chooses not to apply for an extension or to dispute a claim for an extension that has been refused but instead to accelerate the works, the contractor does so on their own account (Hoeben at http://globalarbitrationreview.com).

  Constructive acceleration was considered in the ICC case no. 10847 (2003) (ICC, 2012) under the governing law of an African state. The contractor, a joint venture of two European construction firms was claiming costs of constructive acceleration against an African company (the employer) in a project that comprised civil engineering works for the construction of a hydroelectric plant. In general, the tribunal recognized the doctrine of constructive acceleration. However, for the tribunal to entertain a claim for constructive acceleration (notwithstanding the fact that the contractor was due a greater extension of time than awarded by the engineer), the tribunal had to be convinced that the contractor did, *de facto*, accelerate because they were denied a contractual right to an extension of time and that the contractor did incur real additional costs by reason of the acceleration. The fact that additional resources were brought to the site does not, in itself, prove acceleration. Accordingly, the tribunal dismissed this head of claim.

The US approach to constructive acceleration by Robert A. Rubin and Sarah Biser (the USA)

Constructive acceleration occurs when an employer orders a contractor to complete the work by the contract completion date – despite the existence of excusable delay or the addition of extra work that entitles the contractor to an extension of time. When an employer fails to recognize that the contractor is entitled to an extension of time, it forces the contractor to perform the work in a shorter period of time than would have been available had an extension been given. US law readily recognizes this type of claim. US courts require the following five requisite elements of a constructive acceleration claim:

1. The contractor encountered excusable delay or was ordered to perform extra work affecting the critical path.
2. The employer had knowledge of the excusable delay or extra work and that it affected the critical path.

3. The employer failed or refused to grant the contractor's request for an extension of time.
4. There was some act or statement by the employer that could be construed as an acceleration order, such as reference to liquidated damages or termination.
   (a) In some US jurisdictions there is the additional requirement that the contractor must have notified the employer that the contractor deemed the employer's act or statement to be a constructive order to accelerate; that the contractor will accelerate; and that the contractor will claim additional compensation for any cost incurred.
5. In fact, the contractor did accelerate performance and incurred additional cost as a result.

An employer can order acceleration directly or indirectly. A direct order is usually obvious. What is less obvious is whether an employer intends the contractor to accelerate a job when it asks the contractor to adhere to the original schedule despite extra work or excusable delay, stresses the urgency of the project, or threatens the contractor with termination or liquidated damages. Therefore, an employer has to choose their words very carefully when they use such language, lest it be deemed a constructive acceleration directive.

Acceleration damages (whether ordered or constructive) can include the following:

1. increased labour costs due to increased numbers of crafts persons working on the job, or the same crafts persons working more hours per day or more days per week at overtime wage rates;
2. loss of craft labour productivity resulting from more labourers than can efficiently work together being required to work in a limited area so the job can be completed sooner, or from fatigue working more hours per day or more days per week than usual for a prolonged period of time, or from working in climatic conditions under which they would not otherwise have worked;
3. increased procurement costs because a contractor had to pay extra for early delivery of materials, or had to procure materials locally on short notice, rather than from the usual sources with normal lead time; and
4. extra supervision costs incurred because of the need for more foremen to supervise the extra labourers.

The following two case examples illustrate how US courts deal with constructive acceleration claims, one case granting the relief claimed and the other denying relief.

The first case *SNC-Savalin America, Inc*. ('SNC') *v. Alliant Techsystems, Inc*. ('ATK'), 858 F.Supp. 620 (U.S.D.C.,Va. 2012), involved a contract for the design and construction of a new nitric acid and sulfuric acid concentration plant at the Radford, Virginia, arsenal owned by the United States Army and operated by ATK. ATK and SNC entered into a multi-million dollar design-build contract pursuant to which SNC agreed to provide engineering, procurement, and construction services.

Unfortunately, the path to completion was fraught with delays, disputes, and plan alterations. In the end, SNC did not meet the deadline set out in the contract. Not surprisingly, the parties disputed where to place the blame for the delays. SNC contended that delays resulted from unusually severe winter weather. SNC asserted a constructive acceleration claim arising from ATK's denial of its weather-related time extension request. The parties' contract expressly

permitted time extensions for 'unusually severe weather', and it was undisputed that the winter during which the construction took place was the sixth coldest and second snowiest on record.

It was also undisputed that:

- SNC notified ATK that severe winter weather was impacting its performance.
- SNC formally requested a 30-day time extension, which was promptly denied by ATK.
- ATK threatened to impose liquidated damages if the work was not completed by the date established in the contract; and
- SNC actually accelerated its performance, incurring documented additional costs.

ATK's principal defence to SNC's constructive acceleration claim was that SNC failed to provide 'post-denial' notice that it deemed ATK's actions as ordering acceleration for which ATK intended to assert a claim. The court, in rejecting ATK's defence, noted that while many construction contracts do, in fact, mandate such notice be given as a prerequisite to claims' assertion, the contract between the parties to this project did not impose such a requirement. Therefore, the court concluded that the time extension denial was wrongful and that SNC was entitled to recover additional compensation for its constructive acceleration claim.

The second case, *Fraser Construction Company v. United States*, 384 F.3d 1354 (Fed. Cir. 2004), involved the claim of an excavation contractor on a US government flood-control project on the South Fork Zumbro River in Rochester, Minnesota, alleging that they had been constructively accelerated by the Army Corps of Engineers' refusal to grant sufficient time extensions for high water flows, requiring it to perform work throughout the summer months of continued high water flows, whereas if the time extensions had been granted, it would have shut down its operations until the waters receded to levels that were more nearly normal.

The contract work entailed excavating material from the bottom of Silver Lake, a shallow reservoir located along the Zumbro River. Before the project began, the water level in the lake was to be lowered by approximately 8 feet to facilitate excavation of the lake bottom. At that water elevation, most of the lake would normally be dry, except for a small stream running through the lake bed.

The contractor, Fraser, submitted to the Corps a proposed plan of operations to divert the stream into a trench along the edge of the dry lake bed and to construct an earthen dike to confine the water to the trench. The dike was originally designed to withstand a water flow rate of 800 c.f.s. Government records, however, showed that water flow in excess of the flow the dike was designed to handle could destroy the dike and flood the lake bed. The records also showed that water flow of significantly more than 800 c.f.s. could be expected to occur, on average, approximately 2.4 times per year during the summer months.

In comments accompanying the Corps' acceptance of Fraser's plan of operations, the Corps pointed out that the diversion system Fraser had selected 'will be susceptible to damage by flow amounts which are anticipated to occur during the May to August time frame. *Delays due to such flows are not justification for weather-related extension of the contract completion date*' (emphasis added).

The Corps' concerns turned out to be well founded. Because of wet weather in the region, Silver Lake began to experience high water flows shortly after the project started, damaging the dike, flooding the work site, and delaying the work. The Corps denied Fraser's time extension requests and sent Fraser a letter demanding that the company improve its progress and threatening to terminate the contract due to delays in the project. Fraser continued work without

notifying the Corps that it deemed the Corps' action a constructive acceleration order for which it would claim additional compensation. After completion of the project, Fraser asserted numerous claims against the Corps, including a claim for constructive acceleration, which the Corps denied.

The Court upheld the Corps' denial of the constructive acceleration claim on the grounds that Fraser was not entitled to the time extension it sought, and, in any event, that Fraser had failed to provide the Corps with the requisite post-denial notice.

Generally speaking, US law recognizes constructive acceleration claims, provided that the prerequisites for such claims have been satisfied.

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8.4.3 Voluntary acceleration

A contractor that accelerates without being instructed to do so by the employer or fails to notify a claim for additional payment and extension of time for completion (because of a delay caused by the employer) is deemed a 'volunteer'. In other words, this situation is recognized as voluntary acceleration and claims by the contractor for additional payment are without legal standing.

8.5 Proving the acceleration claim

In the ICC case no. 10847 (2003) (ICC, 2012), the tribunal found that the mere presence of additional resources did not evidence acceleration. This should have been demonstrated by specific records of how the resources were used and permitted acceleration of the progress of the works. When acceleration claims are being proved and quantified, critical paths in as-planned (or last updated) and as-built time schedules are usually matched against each other to reflect, retrospectively, additional cost caused by acceleration and to prove that the acceleration has actually taken place. When providing such evidence, it is vital that contemporary records and documents be kept. For example:

- minutes and records of meetings;
- correspondence between employer/contract administrator and contractor;

- monthly bank statements;
- invoices;
- variation orders;
- changes in design;
- site logbooks, diaries and daily records;
- photographs and videos;
- progress reports;
- construction organization plans;
- records of contractor's personnel and equipment;
- plans of work;
- attendance control sheets;
- time schedules with supporting reports including: (1) a general description of the methods which the contractor intends to adopt; (2) major stages in the execution of the works; and (3) details showing the contractor's reasonable estimate of the number of each class of contractor's personnel and of each type of contractor's equipment required on site at each major stage (as specified in the FIDIC forms).

Extra costs incurred by acceleration are similar to disruption costs. Take, for example, loss of efficiency (productivity) of coordinated and well-trained teams that are available for the planned works. A certain number of workers are on site and maximally efficient at certain time shifts. If there is acceleration, the workers may need to be re-trained, their job description altered and overtime work performed.

Increasing the number of workers on small building construction project sites (where a large number of workers are co-operating in the same time) creates a greater risk environment for processes. Furthermore, the price of materials may increase because of the necessity to accelerate deliveries, more machinery or equipment is required and surveillance processes are disrupted due to more difficult coordination. Higher subcontracting costs constitute another critical aspect. Given that the contractor requires greater capacity, it is often difficult to obtain this extra capacity quickly and at a reasonable price. Site and headquarters overheads may also increase and management must pay more attention to the project because the work is riskier and performed under time pressures (stress). Where acceleration is required by the employer, the above-mentioned costs and inefficiencies will pass onto them from the contractor.

Specialists in delay analysis are usually hired to deal with these specific issues. It is important to mention that in many countries, delay analysis is not as developed and used as frequently as in the common law countries.

8.6 Substantial change

Public procurement law aspects must be mentioned in connection with variation procedures and variation provisions in public contracts for construction works. What is called 'substantial change' and its definition will be explained further here. Public procurement law allows for variations but traditionally defines limits applicable to variation procedures. It is therefore very important to set these limits

reasonably as variations can potentially affect any construction project. Moreover, their consequences are often hard to foresee.

According to the case *Pressetext Nachrichtenagentur Gmbh v Republik Österreich and others* (Case C-454/06) ('Pressetext'), substantial changes are either not permitted altogether, or not permitted without first executing a new procurement procedure. This decision of the European Court of Justice arose from a claim brought by *Pressetext*, a news agency that unsuccessfully tendered its services to the Austrian government. *Pressetext* alleged that various amendments made to the contract between the Austrian government and its incumbent provider of news services, the Austria Presse Agentur, constituted an unlawful award of contract contrary to EU procurement rules.

In this case, the European Court of Justice has provided guidance on what constitutes a material amendment and when a proposed contract 'variation' ought to be, in fact, dealt with by way of a new contractual procurement process. The key part of the European Court of Justice ruling is that a change to an existing contract would constitute a 'material difference' where:

- the change to be introduced into the contract conditions, had it been part of the initial tender, 'would have allowed for the admission of tenderers other than those initially admitted or would have allowed for the acceptance of a tender other than the one initially accepted'; or
- the change would result in the scope of the original contract being extended 'considerably to encompass services not initially covered'; or
- the change would result in a shift in 'the economic balance of the contract in favour of the contractor in a manner which was not provided for in the terms of the initial contract'.

Other limitations prescribed by public law also need to be considered when dealing with variations – particularly in terms of additional works and their respective regulation; however, if there is a variation procedure contractually defined, and risks are allocated in an efficient way, and reasonable claims options are reserved, then the rules are the same for everybody – with free and transparent competition allowed in an appropriate way for such a specific process as the construction project is. The number of claims and variations depends then on how well the project is prepared and on the nature and foreseeability of risks in a particular project. The competence and common sense of the employer, the engineer and the contractor in variation and claim evaluation are the key to success and dispute avoidance. This requires that it is not left to the discretion of the parties to negotiate the price adjustments or in any other way to make an arbitrary change in price (Hartlev and Liljenbøl, 2013). The problem in many countries is ambiguous public procurement law. Public employers are often reluctant to approve even necessary variations and claims because of political pressure and fear of criminal responsibility. In terms of the projects subject to subsidies, the employers are often under pressure to follow strict rules. In cases of violations, they may also lose important grants. Particular variations are seen as risky in this regard and this leads employers to refuse to instruct and/or pay for variations and claims. Furthermore, even necessary variations must be paid from the employer's own resources without the opportunity to have it paid from subsidies.

Modification of contracts during their execution under EU law by Odysseas P. Michaelides (Cyprus)

Standard forms of work contracts, like FIDIC, generally provide for cases of variations of the works, usually initiated by the employer, the engineer (if applicable) or even the contractor. Such variations usually include changes to the quantities, the quality or other characteristics of any item of the works included in the contract, additional work to be delivered, changes to the sequence or timing of the execution of the works, changes to the dimensions of the works, etc.

The need for variations usually arises because, generally, contract documents cannot always foresee all the future events which may occur and the changes are required to deal with such unforeseen circumstances. Thus, quite often, variations are absolutely necessary for the completion of the works. For example, there could be the need for a change of the foundation of a bridge from a pad foundation to piles due to unforeseen ground conditions.

In other cases, variations are decided by the employer due to changed requirements or needs. For instance, the owner of an office building (the employer) could decide during construction that the meeting room is not big enough and that it should be enlarged into the neighbouring open space. The contractor is bound by such variations instructed by the employer (or the engineer, as the case may be) unless otherwise provided in the contract. Moreover, some contracts provide for a mechanism that allows the contractor to propose variations. If the employer rejects these proposals, the contractor has no right to compensation.

In any case, the variation clause usually provides that when a variation takes place, then the contractor is compensated for any additional cost and, where appropriate, is given an extension of time.

Usually, variations may not (without the contractor's consent):

- Change the fundamental nature or the scope of the works.
- Be of a different character or extent than the one contemplated by, and capable of being carried out, under the provisions of the contract.
- Omit work if the omitted work will be carried out by another contractor.
- Be instructed after practical completion.

In most common law jurisdictions, no power to order variation is implied and hence, in the absence of express terms in the contract allowing variations, the contractor may reject instructions for variations without any legal consequences. That is why standard forms of contract generally include express provisions giving the employer (or the engineer) the power to instruct variations.

As explained above, a contract usually includes a mechanism which regulates the variation of the works to be executed. However, a need to change the terms of the contract (conditions of contract) sometimes occurs. This kind of change is referred to as an amendment to the contract. For example, the contract could provide that the works should be completed within 24 months but during the execution of the works a need for acceleration of the works reduces that time to 18 months. This constitutes a change to the contract terms that the parties had agreed and accepted when the contract was signed. Therefore, this kind of change cannot take the form of an instruction by the employer (nor by the engineer) and can be implemented only if mutually agreed to between the employer and the contractor in a new (supplementary) agreement.

The two parties are generally free to agree, either as part of their original contract or through a subsequent agreement, to change the contract terms or to vary the works to be executed. Such a decision to change the original contract is valid if the conditions (depending on the applicable law) necessary for a valid contract are fulfilled (e.g. parties capable of contracting, consent of the parties, a lawful object and consideration). However, this is not always true in the case of a public works contract within the European Union (EU). In accordance with EU law (which, until now has been mainly developed by case law), the implementation of a public works contract must not:

- substantially modify the provisions of the signed contract. A modification is considered 'substantial', if it substantially changes the contract compared to the original signed contract.
- Substantially alter the nature and financial scope of the contract during implementation.

If there is a need for such material changes to the initial contract – in particular to the scope and content of the mutual rights and obligations of the parties – then a new procurement procedure under EU law is required, since such changes demonstrate the parties' intention to renegotiate essential terms or conditions of that contract. This is particularly the case if the amended conditions would have had an influence on the outcome of the initial procurement procedure, had they been part of that procedure.

EU case law recognizes that contracting parties can be faced with external circumstances that they could not foresee when they entered into the contract. Therefore, a certain degree of flexibility is accepted as necessary to adapt the contract to these circumstances without a new procurement procedure. The notion of unforeseeable circumstances generally refers to circumstances that could not have been predicted despite reasonably diligent preparation of the initial award by the contracting authority, taking into account the available means, the nature and characteristics of the specific project, good practice in the field in question and the need to ensure an appropriate relationship between the resources spent in preparing the award and its foreseeable value. However, EU case law was never willing to accept that this approach could apply in cases where a modification of the outcome of the overall procurement was due to an alteration. For instance, by replacing the works to be delivered by something different or by fundamentally changing the type of procurement since, in such a situation, a hypothetical influence on the outcome may be assumed.

In line with the principles of equal treatment and transparency, the contractor cannot be replaced by another, cheaper operator without offering the contract to competition. However, the contractor may undergo certain structural changes during the performance of the contract, such as internal restructuring, mergers and acquisitions or insolvency. Such structural changes should not automatically require new procurement procedures for all public contracts performed on that undertaking.

Based on the above, EU lawmakers seem to recognize that contracting authorities should have the possibility to provide for modifications to a contract by way of review clauses, but such clauses should not give them unlimited discretion. To this end, appropriate provisions have been included in a new EU Public Procurement Directive in order to set the extent to which modifications may be provided for in the initial contract.

In the Directive of the European Parliament and of the Council on public procurement published in 2014, the following article have been included to cover the modification of contracts during their term and to regulate the case of forced termination of a signed contract:

Article 72 modification of contracts during their term

1. Contracts and framework agreements may be modified without a new procurement procedure in accordance with this Directive in any of the following cases:
   (a) where the modifications, irrespective of their monetary value, have been provided for in the initial procurement documents in clear, precise and unequivocal review clauses, which may include price revision clauses, or options. Such clauses shall state the scope and nature of possible modifications or options as well as the conditions under which they may be used. They shall not provide for modifications or options that would alter the overall nature of the contract or the framework agreement;
   (b) for additional works, services or supplies by the original contractor that have become necessary and that were not included in the initial procurement where a change of contractor:
      i. cannot be made for economic or technical reasons such as requirements of interchangeability or interoperability with existing equipment, services or installations procured under the initial procurement; and
      ii. would cause significant inconvenience or substantial duplication of costs for the contracting authority.

      However, any increase in price shall not exceed 50 % of the value of the original contract. Where several successive modifications are made, that limitation shall apply to the value of each modification. Such consecutive modifications shall not be aimed at circumventing this Directive;
   (c) where all of the following conditions are fulfilled:
      i. the need for modification has been brought about by circumstances which a diligent contracting authority could not foresee;
      ii. the modification does not alter the overall nature of the contract;
      iii. any increase in price is not higher than 50 % of the value of the original contract or framework agreement. Where several successive modifications are made, that limitation shall apply to the value of each modification. Such consecutive modifications shall not be aimed at circumventing this Directive;
   (d) where a new contractor replaces the one to which the contracting authority had initially awarded the contract as a consequence of either:
      i. an unequivocal review clause or option in conformity with point (a);
      ii. universal or partial succession into the position of the initial contractor, following corporate restructuring, including takeover, merger, acquisition or insolvency, of another economic operator that fulfils the criteria for qualitative selection initially established provided that this does not entail other substantial modifications to the contract and is not aimed at circumventing the application of this Directive; or

iii. in the event that the contracting authority itself assumes the main contractor's obligations towards its subcontractors where this possibility is provided for under national legislation pursuant to Article 71;

(e) where the modifications, irrespective of their value, are not substantial within the meaning of paragraph 4.

Contracting authorities having modified a contract in the cases set out under points (b) and (c) of this paragraph shall publish a notice to that effect in the *Official Journal of the European Union*. Such notice shall contain the information set out in Annex V part G and shall be published in accordance with Article 51.

2. Furthermore, and without any need to verify whether the conditions set out under points (a) to (d) of paragraph 4 are met, contracts may equally be modified without a new procurement procedure in accordance with this Directive being necessary where the value of the modification is below both of the following values:

(i) the thresholds set out in Article 4; and

(ii) 10 % of the initial contract value for service and supply contracts and below 15 % of the initial contract value for works contracts.

However, the modification may not alter the overall nature of the contract or framework agreement. Where several successive modifications are made, the value shall be assessed on the basis of the net cumulative value of the successive modifications.

3. For the purpose of the calculation of the price mentioned in paragraph 2 and points (b) and (c) of paragraph 1, the updated price shall be the reference value when the contract includes an indexation clause.

4. A modification of a contract or a framework agreement during its term shall be considered to be substantial within the meaning of point (e) of paragraph 1, where it renders the contract or the framework agreement materially different in character from the one initially concluded. In any event, without prejudice to paragraphs 1 and 2, a modification shall be considered to be substantial where one or more of the following conditions is met:

(a) the modification introduces conditions which, had they been part of the initial procurement procedure, would have allowed for the admission of other candidates than those initially selected or for the acceptance of a tender other than that originally accepted or would have attracted additional participants in the procurement procedure;

(b) the modification changes the economic balance of the contract or the framework agreement in favour of the contractor in a manner which was not provided for in the initial contract or framework agreement;

(c) the modification extends the scope of the contract or framework agreement considerably;

(d) where a new contractor replaces the one to which the contracting authority had initially awarded the contract in other cases than those provided for under point (d) of paragraph 1.

5. A new procurement procedure in accordance with this Directive shall be required for other modifications of the provisions of a public contract or a framework agreement during its term than those provided for under paragraphs 1 and 2.

It is anticipated that the new Directive will dispel some ambiguities existing today on this issue due to the lack of concrete legal provisions. However, the myriad of different cases to be considered under the new regime will probably lead to some further debate on the correct interpretation of these provisions.

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9 Claims

9.1 Claims

Good contracts for construction works pre-define mutual liability claims for the compensation of both parties, in particular, those that may arise from a delay or disruption in performance under the contract. Sound contracts also include a procedure that describes how to make and enforce a claim. Common examples of potential 'claim' situations may include the project site being handed over later than foreseen at the tender stage, the tender documentation containing errors, and unforeseeable physical conditions leading to prolongation of construction. To avoid potential disputes, a contractual process of 'mutual claiming' should be set up and observed.

An additional cost or delay (if any) caused by the employer, can become an additional payment to the contractor for performance under the contract (if claimed by the contractor). Examples include an extension of the insurance and the performance bank guarantee and unabsorbed time-related site and headquarters overhead cost (such as rentals for the project team offices). On the other hand, lack of standard or contractor's delay can lead to damage compensation or delay damages claimed by the employer.

The bases of claims are as various as construction projects are. For example, in developing countries, claims that are not common in more developed countries may be encountered. In the ICC case no. 10847 (2003) (ICC, 2012), the contractor argued that the employer breached its obligation to provide a telephone connection in time and that, when it did provide one, the telephone system gave a poor quality and unreliable service. The contractor claimed additional costs and an extension of time on these accounts. While the tribunal agreed that the employer was late in supplying a telephone system and that this would have caused disruption to the contractor, the tribunal held that the contractor could not expect service on a par with that in Western Europe or the USA. Consequently, the tribunal denied the contractor an extension of time and costs on account of the quality of the telephone service.

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In the same case, the contractor further claimed that throughout the period of the works it suffered power outages which caused disruption and delayed completion. The contractor claimed that the employer was responsible for the same. The tribunal found that the power outages that occurred were worse than could have reasonably been expected and that, while the contractor had not shown the actual effect of such outages on the progress of the works, they adversely affected the contractor's progress and awarded the contractor an extension of time.

Mutual claiming is, in fact, a way to resolve mutual damages compensations while the project is still ongoing. A contractually prescribed assessment is used to estimate the costs; the contractor and the employer notify the claims to the contract administrator (to the engineer as per FIDIC) or to each other for further handling of them. Ideally, these claims should be quantified, submitted and invoiced on an ongoing (monthly) basis. The method of quantification should be described in the contract or agreed to by the parties.

To demonstrate that construction damages are a difficult area of the law, His Honour Ramsey (2006) commented on this subject as following:

> Burden of proof in any claim for damages usually rests with the party making the claim, the problems of establishing delay and disruption damages in international construction arbitration are felt most acutely by the contractor or, in the case of a sub-contract, by the sub-contractor. They may have suffered loss and expense, or may feel that they have, as a result of occurrences outside of their control or contractual responsibility. They may even consider that the employer is responsible for the delay. Nevertheless unless they can satisfy the applicable requirements of procedural and substantive law, they cannot recover compensation. So far as this goes, this may seem like a statement of the obvious; unless the claim can be established, it cannot succeed. But making out a claim for delay and disruption damages under a construction contract can be problematic.

According to the FIDIC forms, a claim implies a specific requirement raised by either of the contracting parties. Based on pre-defined situations in a particular clause or otherwise in connection with the contract, such a requirement must be notified to the engineer (or in some cases to the other party). The contract sets out a procedure for making a claim that must be followed for successful enforcement of the claim. On the contractor's side, the requirement is usually to extend the time for completion or to increase the price of work via an additional payment from the employer. The employer, on the other hand, usually requires an extension of the defects notification period or to decrease the price of the work via an additional payment from the contractor. A 'claim' is a specific contractual procedure, distinct from a purely legal definition. However, entitlements to payment or damage compensation do inevitably overlap with the principles of the governing law. The actual legal status of a claim has to be evaluated on a case-by-case basis and stage of enforcement. This, however, does not relieve the contracting parties of the duty to follow contractual procedures whenever making a claim.

In the narrow sense, the word 'claim' in the context of a common law construction contract is the assertion made by a party to a contract of an entitlement pursuant to

the express provisions of the contract in question. However, in many countries, the word 'claim' is interpreted to mean a civil action brought before a court of law.

In a construction project, it is important for the contractor to make the contract administrator and the employer familiar with a problem or with subsequent requirements to extend time for completion or increase in the price of the work as soon as possible to allow a fair and quick decision to be made. This helps to protect the employer, which then has more control over project costs and is able to make necessary adjustments to budget and use contingencies. The agenda as a whole comes from the contractual risk allocation to construction project participants. The ability to distinguish between the risks borne by the contractor and the employer further helps to avoid disputes.

It is also argued that the purpose of a claim is to provide the contractor with defensive mechanisms against arbitrary employer behaviour, should the contractor's legitimate demands be refused. The employer is usually protected by time limits (and by related particular processes described below) within which the claim must be notified. An unwritten, traditional rule was that the contractor is subject to stricter and more formal claim procedures because the contractor is usually the best equipped (particularly in terms of human resources) for more aggressive enforcement of its requirements. Recent trends demonstrate the need to establish the same contractual rules and conditions of claim management for both the employers and the contractors. This trend is confirmed by the establishment of time bars for employer claims in the newest FIDIC, NEC and further forms to deal with 'on-site realities'. For example, where aggressive employer's claim management has put contractors (being the weaker party) in 'take it or leave it' type situation in public procurement projects.

A claim is not a dispute. In fact, it is a method of avoiding disputes. Notice of a claim or of any requirement in general (whether by the employer or the contractor) cannot be perceived as an attack that must inevitably evoke a defence. It is an obligatory contractual requirement to be negotiated by the construction project participants. It is usually the employer who chooses this system as a part of the project management conditions by way of contract. If the contractor accepts this system, they are obliged to use it. In other words, the aim is to ensure that the significant issues which often lead to a price increase or extension of time are addressed and solved immediately (during the realization) and not after project completion.

Contractors frequently perceive claim procedures as unfair and unnecessary. The reason is that the contractor carries the burden of notifying, quantifying, documenting and proving the claims even if the claims arise out of events beyond their control. However, based on common law tradition, a notice of claim is a condition precedent for an additional payment or extension of time.

A notice of claim is ideally done via a letter signed by an empowered representative and delivered to the contract administrator (the engineer) in the form and by the period stated in the contract. In the recent case (under FIDIC P&DB/1999 Yellow Book) Obrascon Huarte Lain SA -v- Her Majesty's Attorney General for Gibraltar [2014] EWHC 1028 (TCC) the judge dealt with the form of a claim notice and established minimal requirements for a valid claim in the following way. The claim is (i) made by notice in writing to the engineer, (ii) the notice describes the event or circumstance relied on, (iii) the notice is intended to notify a claim for extension of time (or for additional payment or both) under the contract or in connection with

it, and (iv) it is recognisable as a 'claim'. If the relevant information is transmitted from the empowered representative to the contract administrator (the engineer) and this can be proved, a notice of claim can be part of a record made at a meeting, if signed by the empowered representative and the contract administrator (the engineer). In some situations, a formal notice is not necessary as was held in the ICC case no. 10847 (2003) (ICC, 2012). In this case, the contractor claimed an extension of time and additional costs arising from a significant general increase in quantities which resulted from the contractor's purported acceleration of works. The tribunal considered that, while no formal notice of claim had been given, the notice provision to have been satisfied because the contract administrator (the engineer) would have been aware of the increase in quantities at the time they were incurred and had contemporary records of them.

Claim management is an integral part of project management in large construction projects worldwide. Contractors from European jurisdictions must understand that timely notices of claims are a necessary aspect of their routine work whenever FIDIC and similar forms are used. A situation may arise where the claims are not resolved 'in time' according to the contract and may become time-barred. Late notice can lead to refusal to deal with claims by the contract administrator (or the employer) who can advise the contractor to initiate adjudication, litigation or arbitration for failure to follow formal procedures.

Compliance with claim management procedures will help to ensure that project participants cooperate. This will reduce the adverse impacts of all project-related risks (of the realized hazards) on the participants, as much as possible, and allow the project to be considered 'successful' once completed. Claims are not positive things, but they can be efficiently avoided – particularly at the project preparation phase. In cases of ill-prepared projects, claims will become an unfortunate, daily routine. Most claims can be avoided by preparing clearly understandable and precise contractual documents.

The term 'anti-claim management' is sometimes encountered. Following on from previous paragraphs, the primary 'phase' allowing the use of anti-claim management is the tender preparation phase. Some countries have legal regulations dealing with claim management. For example, Germany uses the *DIN 69905 Standard* and the USA has *The False Claims Act* (31 U.S.C. §§ 3729 – 3733). The latter is also referred to as the 'Lincoln Law'. This is an American federal law that imposes liability upon persons and companies (typically federal contractors) who defraud government programmes.

The listing of potential claims in the contract will facilitate claim management to reflect the original risk allocation. It is a general rule that if a risk of a specific hazard is allocated to one party, the other party can usually claim additional payment and/or an extension of time for completion after risk realization.

Claims caused by deficiencies in tender documents by James Bremen (UK)

Many major construction projects in the emerging markets are driven by the public sector. Those procurement processes are governed by procurement rules which very often have a

two-stage process – technical qualification followed by commercial (i.e. price) evaluation. Far too often, the technical qualification phase is set at a low level, with the result that tenders are awarded to the lowest priced bidders whose technical qualifications are questionable. Bidding contractors are well aware of this 'game' and accordingly approach pricing a job with the knowledge that very often the profitability of the contract will depend upon their ability to bring claims under it as they will have priced their bids as leanly as possible. Where contracts are often rushed to market (with the resulting inadequacies/deficiencies in the technical documentation that the contractor must price), the successful contractors often start to position their claims from day one. The poor quality of the specification and scope (and sometimes commercial documents) will often entitle the contractor to bring claims due to these deficiencies, as well as make it necessary for the employer to make any number of costly variations itself. In an environment where most state developers wish to avoid formal dispute resolution as much as possible, the result is protracted settlement negotiations at the end of projects. This approach is both highly inefficient and does not represent best value for money for developers and could be addressed through investing more time and effort in the preparation and execution of individual procurements.

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9.2 Contractor's claims under FIDIC forms

The general definition of 'claim procedure' is provided in Sub-Clause 20.1 of the FIDIC forms. Procedures for claims for extensions of time for completion and/or for additional payment are laid down there. In general, contractor claims can be subdivided into two categories:

- those listed in the contract (*ex contractu*) – foreseeable events with corresponding article(s) in the contract; and
- others connected with the contract.

Claims for extensions of time for completion are defined specifically at Sub-Clauses 8.4 and 8.5. The option to raise a time claim is anticipated (under FIDIC CONS/1999 Red Book) where there is a variation to or other substantial change in the quantity, a cause of delay giving an entitlement to extension of time for completion under a particular Sub-Clause, exceptionally adverse climatic conditions, unforeseeable shortages of personnel or goods caused by an epidemic or governmental actions or any delay caused by the employer or authorities (meaning public administration authorities).

9.3 Employer's claims under FIDIC forms

The general definition of 'claim procedure' is provided at Sub-Clause 2.5. The claim is foreseen in the form of payment and/or an extension of the defects notification period. The employer's claims can also be subdivided into two categories:

- those listed in the contract (*ex contractu*) – foreseeable events with corresponding article(s) in the contract; and
- others in connection with the contract.

Claims in the St Petersburg flood protection barrier construction by Aleksei Kuzmin (Russia)

In order to gain a better understanding of the actions of the parties in the three cases presented below, a brief introduction of the history of the project in which all these three cases took place is necessary.

The idea of the ambitious project to build a flood protection barrier for St Petersburg (the 'northern capital' of Russia) dates back to the nineteenth century. However, it only came close to physical realization in the late 1960s before the governmental decree to start the construction works was signed in 1979. It is worth mentioning here that construction started in the 'USSR era' since most of the people who were involved with its completion in 2003 – 2011 were either involved in the first phase of the barrier construction or grew up in the communist system.

Work on the barrier was quite active until 1988 when the northern part of the barrier was practically completed and the southern part had just started. Unfortunately, the economic and political situation did not favour the project and the work stopped in 1990. In 2000, Mr Putin became President of Russia and, coming from the northern capital and knowing about the barrier project quite well, he supported its completion as best he could. Thus, in December 2002, a loan agreement was signed with the European Bank for Reconstruction and Development (EBRD) and later with the European Investment Bank (EIB) and the NIB (the Nordic Investment Bank) to finance the barrier completion project, and, in 2004, construction works resumed.

The project included 25km of earth embankment topped by a six-lane motorway, six sets of sluice gates (each with 10 or 12 radial gates) – with a total of 64 gates 24m-wide, a 110m-wide navigation opening with a 2,500-tonne steel vertical rising gate, a 200m-wide navigation channel capable of being closed by two horizontal sector floating steel gates (each weighing 4,500 tonnes), a 1.5km-long concrete viaduct with a steel lifting bridge with a span of 110m and a 1.2km-long reinforced concrete tunnel.

The original plan was to complete the barrier by 2008 (the end of Mr Putin's second term as President), but as often happens in construction, according to Cheops' law, the official completion of the barrier came in 2011.

The government of Russia – represented initially by the State Committee for Construction (Gosstroy) and later by its successor, the Ministry of Regional Development – was the Employer of the project, and a local state enterprise, the Directorate for the Flood Protection Barrier, was acting as the Employer's representative on site, the employer-builder. This

arrangement is usual in Russian state procurement practice. Following the requirements of the EBRD, the construction contracts for the completion works were all based on the FIDIC conditions (mainly the FIDIC CONS/1999 Red Book).

The three cases that follow can be found on the web site of the Supreme Commercial Court of Russia. Being in the public domain, the information contained in them is not confidential. The first two cases resulted from disputes between the Employer and the Contractor over one of the key sites on the barrier.

The contractor was a large construction company, Transstroy, working mainly in Russia. It should be noted that the company had developed out of the Ministry of Transport Construction of the USSR.

The last case arose from a dispute between the contractor mentioned above and one of its subcontractors on the same site. The subcontractor was a Russian-German joint venture, Autobahn, established in 1995 by Wirtgen GmbH and several Russian road building companies.

The design documents for the project completion were to a large extent produced in the 1990s by the Russian design institutes, especially for the site to which all three cases below are related. When the project was brought back to life in 2002, the lenders' requirements included involvement of an independent 'designer consultant' whose task was to review and update the design to follow European standards. The tender for this job was won by a consortium, made up of Halcrow Group Limited (UK), DHV (the Netherlands) and Norplan (Norway). Given the history of the project, it was quite natural that the consortium signed a subcontract with the design company, Lenhydroproject (the design institute in the earlier times), which had led the development of the barrier design by at least a dozen other large, specialized, companies in the period before the project interruption. It made a lot of sense to use the experience of those who knew the project from its very beginning.

The task of reviewing and updating the design was not an easy one as a lot of reinforced concrete structures and steelworks had been preserved from the first stage of the project and demolishing or scrapping them would have only created additional costs. At the same time, many as-built documents for the structures that awaited completion had been lost during the uneasy times of political and economic reforms in the 1990s. The absence of proper as-built documents was one of the reasons for the unforeseeable ground conditions which resulted in Case 1.

Case 1

In this case, the contractor had to go to court with a claim for an extension of time caused by several reasons. First of all, the contractor faced the problem of unforeseeable ground conditions mentioned above which had not been identified either in the tender documents or in the design documents provided by the employer. The contractor informed the Engineer accordingly, following Sub-Clauses 8.4 and 20.1 of the FIDIC CONS/1999 Red Book, and submitted the relevant claim for an extension of time, but the engineer failed to make the necessary determination, thus breaching Sub-Clause 3.5, only informing the contractor of his intention to address the employer regarding this issue. In order to resolve the problem of the unforeseen ground conditions, the contractor had to purchase and import special equipment, which took 173 days to arrive, as the works comprised extraction of large rocks from cofferdams located in the sea. The contractor then had to wait for the beginning of the navigation period through the Gulf of Finland and spend an extra 139 days more than had originally been planned to complete the excavation works since it was more difficult to extract the rocks than to excavate regular

ground. As a result, the contractor became entitled to an extension of the time for completion amounting to 312 days.

Second, the contractor was also entitled to an extension of time under Sub-Clause 8.4 (e) since the employer had delayed several payments, which allowed the contractor to claim for another extension of 193 days.

From the facts of the case one can infer that the relationship between the employer and the contractor was not idyllic as 10 days after the original completion date of the works under the contract the employer held a meeting and ordered the suspension of works for an 'inventory check' of the works completed. The contractor received corresponding instructions with a letter from the engineer and suspended the works in accordance with Sub-Clauses 8.8 and 8.9. As a result, the contractor became entitled to another extension of the time for completion, amounting to 236 days. However, these extra days were not included in the claim brought to the attention of the court.

Further evidence of complicated relations between the parties to the contract is that they failed to appoint the DAB under Chapter 20 of the contract which is why the dispute ended up in court. The court of appeal ruled in favour of the contractor and extended the time for completion by 505 days as the contractor had pleaded. One could say that the contractor had tried to mitigate the problem, judging from the chronicles of the first two cases. Having lost Case 1 in the court of first instance on 22 June 2009, the contractor only submitted his appeal on 12 August 2009, received positive resolution on 8 Sept. 2009 and claimed additional payment on 8 Oct. 2009. The Case 2 summary is below.

Case 2

Case 2 is in fact the continuation of Case 1. The employer refused to pay for the works completed by the contractor claiming that there were defects and the completion of the works had been delayed by the contractor. The employer also considered itself entitled to damages. However, the court decided in favour of the contractor, taking into account the resolution in Case 1 and noting that under Russian law, damages must be proven with substantial evidence. The liquidated damages referred to by the Employer (or 'pre-estimated damages' as they were put in the Russian translation of the FIDIC contract conditions used during the drafting of this particular contract) are not recognized as such under Russian law, but are rather closer to the concept of a 'penalty' in the Russian legal system.

Case 3

Case 3 is especially interesting as here we find the contractor mentioned above as the defendant. Case 3 arose from a dispute between the contractor and its subcontractor. The subcontractor pleaded that he was entitled to the payment of works (about US$650,000) accepted by the contractor under the forms KS-2 and KS-3 – these are in fact old, Soviet-style accounting documents, dating back to 1972, but revised in 1999 and still used in construction in Russia, stating which works have been completed under the contract during a certain period and their costs. They can be used under a contract based on FIDIC conditions, but should not be confused with taking over certificates. In Russian, their title is 'Act of Delivery and Acceptance of Works/Services', which usually means that, by signing them, the employer accepts the quality and amount of works delivered and must therefore pay for the works in full as stated in the

form. If the Employer has objections, he should refuse to sign the form and state, in writing, the reason of his refusal. The courts interpret the forms as evidence of the delivery of the works by the contractor and their acceptance by the employer. Since the works mentioned above and other works had been accepted by the contractor, the subcontractor also considered himself entitled to the retention money withheld (about US$4.5 million) and to the use-of-money interest (about US$0.5 million).

The contractor contested those claims by a reduction of the subcontractor's remuneration for the additional works done by the subcontractor (about US$2 million), claiming that the additional works had not been agreed to by the contractor, and by LDs of about US$2 million due to delays in the completion of the works.

The court, as is often the case in Russia, started by considering the essential conditions of the contract and ruled that the contract had not been concluded since the time for completion was not stated properly in the contract (according to the *Russian Civil Code*, it must be expressed either with calendar dates or through an inevitable event). Therefore, the Contractor was obliged to pay for the works delivered by the subcontractor as, 'according to the *Russian Civil Code*, Art. 711, the only grounds for the payment of completed works is the delivery of their result to the employer', and to release the retention money in full. However, since the contract had not been concluded, the court found no grounds under Russian law for the use-of-money interest calculated in foreign currency. The court further decided that the interest as a penalty did not correspond to the consequences of the breach of contract and decreased it by half.

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9.4 Lapse of claim

Contracts often contain a provision stipulating time limits within which the claims must be notified. These claims are subject to a sanction should they be notified late. A claim that is notified late is referred to as being lapsed ('time-barred'). For example, the FIDIC sample forms stipulate as follows:

> If the contractor considers himself to be entitled to any extension of the time for completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the contract, the contractor shall give notice to the engineer, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 28 days after the contractor became aware, or should have become aware, of the event or circumstance. If the contractor fails to give notice of a claim within such period of 28 days, the time for completion shall not be extended, the contractor shall not be entitled to additional payment, and the employer shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply.

Precedents in respect of the admittance and status of contractually time barred claims are ambiguous across different jurisdictions. Despite this, the common opinion prevails that the aim of such provisions is to solve these problems in a timely and transparent manner. The failure to follow formal procedures may lead to a situation in which the defendant may refuse to deal with the claims and refer the other party to litigation or arbitration. Every particular time-barred claim must be evaluated individually and in respect of the particular delivery method adopted, the related risk allocation, the nature of the claim and the relevant governing law.

9.4.1 Risk allocation and claims interconnections

Where a risk is allocated to one party, the other party may, once the risk is realised, claim an additional payment or extension of time for completion (or extension of the defects notification period on the employer's side). In general, four basic risk allocation 'modes' with related claiming options can be distinguished, depending on the individual delivery methods:

- *General contracting mode*: Used when public infrastructure projects are implemented, in underground projects, or – in general – where there are very few foreseeable and controllable risks. Design risks are borne by the employer. The risks must be allocated reasonably and it is recommended to allocate the risk to the party which can best manage it. Therefore, it is necessary to allow 'claiming upon realization' of the other party's particular risk.
- *Design-build mode*: Used in the realization of all projects – regardless of type. The contractor is responsible for design and construction and the risks must be allocated reasonably – particularly in respect of the project and its respective risk analysis. Even in DB projects, the priority must be to allocate the risk to the party which can best manage it. Claims must be allowed upon realization against the other party's particular risk.
- *EPC mode*: In EPC projects the lion's share of risk is typically allocated to the contractor. The contractor is therefore obliged to scrutinize the tender documents (including lay-out, design, and the like) and is responsible for almost all related errors. The contractor must also verify all on-site conditions and is responsible for any complications caused by adverse hydrological and geological conditions. The contractor usually has limited claim options and, therefore, the use of this approach is only appropriate for certain construction projects. In particular, those that allow enough time to appropriately scrutinize the tender documents and inspect on-site conditions. The contractor must price such projects with a substantial risk surcharge and the employer must understand and accept this surcharge.
- *CM mode*: The nature of a particular contract and employer priorities are key factors in terms of risk allocation and claims options under the CM mode. The CM mode can be applied to projects of all types including building, civil engineering and EPC projects (the EPCM delivery method in such case). Direct contracts between the employer and individual prime contractors must allocate risk in an appropriate way and include the related claiming admission. By having no contractual responsibility for contractor performance, the construction

manager may also act on the employer's behalf while dealing with the claims. The method the construction manager will apply to deal with these claims and the way the risks are allocated between the construction manager and the employer (including the mutual claiming options) must be appropriate for a particular construction project. The contract between the construction manager and the employer is usually in the form of a professional service agreement. However, it is still recommended to arrange the risk allocation and claiming options in line with standard construction contract forms (even where the CM-At-Risk approach is used).

9.5 Cause of the claim

It is essential to identify the material substance of a claim (the cause) whenever analysing a lapse of this claim. The following are typical causes of contractor claims for additional payment or extensions of time for completion within large construction projects:

- *Employer delay*. For example, when providing a design, in approving a necessary document, in giving a necessary instruction, in handing over the site or obtaining required permission.
- *Errors in tender documents* such as defective setting-out, design errors, errors in site data.
- *Employer obstructions*. For example, during tests, during the taking-over of work.
- *Unforeseeable conditions* such as unforeseeable physical conditions on site, unforeseeable forces of nature.
- *Consequences of employer risks*. Exceptional events (*force majeure*), such as a war, terrorism, unrest, strike, radiation and contamination, natural disasters.
- *Shared risks* such as extremely adverse climatic conditions and delay caused by third parties (authorities).
- *Other delays or disruptions* of the construction process with an employer's risk, such as archaeological findings, suspension instructed by the employer, site handed over not free of third parties rights (public and service utilities and the like), project termination consequences.

9.6 Limits of the lapse of claim

Due to differences in particular legal systems, it is important to analyse the limits for a potential lapse of claim in case of a failure to notify within the period prescribed in the contract. Whether the claim becomes time-barred or not depends mainly on the contract itself and governing contract law. In civil law countries, codified provisions may define:

- *Limitation of damages*. The governing law will sometimes include a provision, which excludes to cap the damages. Time bars applicable to claims could be interpreted as damages limitation (or as unfair penalty clauses or waivers) and may be deemed invalid.

- *Employer delay*. Another limit is the employer's delay. If damage (or late notice of claim) is caused by an employer's delay, this could imply a claim lapse limit because, as a general rule, nobody can profit from something caused through fault of their own. This is a relevant civil and common law doctrine. Under common law, the 'prevention principle' is a long established rule whereby a party may not enforce a contractual obligation against the other party where it has prevented the other party from performing that obligation. The prevention principle is similar to the principle that no party may benefit from its own breach of contract (civil law).
- *Compliance with good manners and good faith protection*. In civil law countries, any conduct must be in compliance with good manners and honesty. Therefore, the claim lapse provision and consequences of late notification of a particular claim must be honest and in compliance with good manners and the principle of good faith.
- *Other mandatory, general provisions* prescribed by governing law.

In common law jurisdictions: (1) time bars are enforceable on the basis of contractual agreement – under FIDIC Sub-Clause 20.1 notice is a condition precedent to the right to recover either time or money; and (2) a party should not benefit from its own breach of contract (prevention principle).

In civil law countries, one has to evaluate what the following provisions (FIDIC Sub-Clause 20.1) really mean in law: 'the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Employer shall be discharged from all liability in connection with the claim … '.

There are three general interpretations available. First, time bars could be seen as a so-called 'contractual preclusion'. Preclusion cannot usually be agreed to contractually in civil law countries. Second, a time bar could be seen as a contractually agreed modification of limitation (prescription) period. In some jurisdictions this is valid and in others it is not. The third approach is that a time bar is simply a specific provision that has a different purpose and has nothing in common with the *Statute of Limitations*.

For example, according to Article 119 of the *Polish Civil Code*; 'Periods of limitation may not be shortened or prolonged by a legal act.' Since the *Statute of Limitations* cannot be contractually modified, the same principle should apply to a time bar. This can result in a Sub-Clause 20.1 time bar being deemed null and void.

Some recent civil law jurisprudence presents good examples:

- *Case 1*: The Appellate Court in Warsaw (30 May 2011, I ACz 700/11) held that a FIDIC notice requirement is a contractual time bar and does not modify or offend *Statute of Limitations* rules. The court further stated that FIDIC forms are commonly used in the industry and constitute an integral part of the parties' freedom of contract. In terms of the notice of claim requirement, it is merely a precondition to arbitration and it is not contrary to Polish public policy.
- *Case 2*: The Regional Court in Warsaw (13 July 2011, XXV C 701/10) ruled that the 28-day time bar contradicts *Polish Civil Code* provisions on the statute of limitations and is null and void in this respect; however, a contractor, despite lack of notice, does not lose their claims. The contractor is contractually liable for breach of contract (breach of a Sub-Clause 20.1 condition).

Similar outcomes and court commentary have been encountered across a number of other jurisdictions.

Precedents from the common law domains are also inconsistent on the claim lapse issue; see, for example, *Turner Corporation Ltd (Receiver and Manager Appointed) v. Austotel Pty Ltd* (2 June 1994); (1997) 13 BCL 378 at 12 by Cole J., *Gaymark Investments Pty Ltd v. Walter Construction Group Ltd* [1999] NTSC 143; (2005) 21 Const LJ 71, *Multiplex Construction (UK) Ltd v. Honeywell Control Systems Ltd* [2007] EWHC 447 (TCC) and *Nat Harrison Associates, Inc v. Gulf States Utilities Company* 491F.2d 578 (5th Cir. 1974).

The tribunal in the ICC case no. 10847 (2003) (as commented on in ICC, 2012) correctly held that under Sub-Clause 53.4, a failure to notify a claim for additional payment does not bar the claim for additional costs but limits the amount that can be decided or awarded by the engineer or an arbitral tribunal, respectively, to sums, if any, which can be verified by contemporary records.

Sub-Clause 53.4 (FIDIC Red Book, 4th Edition, 1987) reads:

> If the contractor fails to comply with any of the provisions of this Clause in respect of any claim which he seeks to make, his entitlement to payment in respect thereof shall not exceed such amount as the engineer or any arbitrator or arbitrators appointed pursuant to Sub-Clause 67.3 assessing the claim considers to be verified by contemporary records.

Contemporary records have been held to mean records produced or prepared at the time of the event giving rise to the claim, whether by or for the contractor or the employer. As a practical matter this means that, in such a case, a party cannot rely on witness testimony alone to substantiate such a claim but must be able to justify it by means of contemporary records.

In one of the most significant common law cases, *Multiplex Construction (UK) Ltd v Honeywell Systems* [2007] EWHC 447 (TCC), the court held that:

> Contractual terms requiring a contractor to give prompt notice of delay serve a valuable purpose; such notice enables matters to be investigated while they are still current. Furthermore, such notice sometimes gives the employer the opportunity to withdraw instructions when the financial consequences become apparent.

In England the trend still confirms that courts are prepared to enforce time bar clauses. See for example WW Gear Construction Ltd v McGee Group Ltd. [2010] EWHC 1460 TCC and Steria Ltd v Sigma Wireless Communications Ltd. [2007] EWHC 3454 (TCC). In Germany, the Sub-Clause 20.1 time-bar is seen as ineffective according to §9 AGBG (German Standard Form Contract Act) because it is inappropriately prejudicial to the contractor (Kus, Markus and Steding, 1999).

Construction claims in the UK by Garry Kitt (UK)

In the UK, the courts (albeit with some reluctance) continue to support the doctrine of condition precedent. In *Bremer v Handelgesellschaft mbH v Vanden Avenne Izegem* P.V.B.A [1978]

2 LLR 109, the House of Lords stated that a notice provision was unlikely to be a condition precedent unless 'it prescribed a specific time for delivery of the notice and clearly stated that the rights would be lost in the event that notice was not given'. Separately, in *City Inn v Shepherd Construction* (2003) CILL 2009, the Inner House of the Court in Session confirmed that a properly drafted condition precedent clause would be enforceable.

The concept of 'prevention' is based on the universally accepted proposition that a party to a contract is not entitled to benefit from its own breach. Accordingly it operates to defeat the employer's claims for, say, delay damages if, by its own acts or omissions, the employer has prevented the contractor from completing its work by the date for completion, and, as a consequence time becomes 'at large'.

To protect the employer's right to claim delay damages and to avoid the time for completion to be declared 'at large', the contract makes provision for the contractor to seek an extension of the time for completion if the employer is responsible for the delay incurred by the contractor (see FIDIC Sub-Clause 8.4(e)).

The issue with the (FIDIC Sub-Clause 20.1) condition precedent to the contractor's right to claim for an extension of time, is that if the contractor fails to comply with the stated time bar, then their right to claim for additional time will be forfeit, and the question therefore arises as to whether the Employer will then still be able to claim Delay Damages (and arguably rely on its own default).

The above matter was considered in 1999 in the case of *Gaymark Investments Pty Ltd v Walter Construction Group* [1999] in the Northern Territory of Australia, where the court held that the 'prevention principle' took precedence over the notification provisions, notwithstanding the fact that such provisions had clearly been drafted as a condition precedent. The Employer was accordingly not allowed to claim for (delay) damages and the Contractor was not deprived of their right to claim for an extension of time in spite of their failure to serve a valid notice.

This judgment has prompted a divided opinion as to whether the same principles should be applied in England and Wales and other common law jurisdictions. It has been argued that a similar approach might be adopted, whereas others have rejected the reasoning of the court in *Gaymark*.

In a number of jurisdictions, public policy and/or mandatory provisions of the law place weighted emphasis on the concept and practice of 'good faith' within commercial contracts. Good faith is difficult to define, though in the UK it is settled law that a party to a contract cannot benefit from its own breach. English courts have said (*CIA Borcad & Panona SA v George Wimpey & Co* [1980] 1 Lloyd Rep 598) that

> It is a principle of Fundamentals justice that if a promisor is himself the cause of the failure of performance, either of an obligation due to him or of a condition upon which his own liability depends, he cannot take advantage of that failure.

At first glance, the above proposition may not be helpful in the context of mere failure by the contractor to satisfy the 28-day time bar for notification as required by Sub-Clause 20.1. However, circumstances where the claim would otherwise be patently admissible and derived from default by the Employer are clearly another matter. In the United Arab Emirates, Article 246 of the Civil Code provides: 'a contract must be performed in accordance with its contents and in

compliance with the requirements of good faith'. Elsewhere the same Code states: 'the exercise of a right is considered unlawful in the following cases:

- If the sole aim thereof is to harm another person.
- If the benefit it is desired to realize is out of proportion to the harm caused thereby to another person.
- If the benefit it is desired to realize is unlawful.

Although the contractual obligation to comply with the Sub-Clause 20.1 time bar is likely to be enforced by the engineer (who is obliged to administer the contract on its terms), the conduct of the employer is of fundamental importance when such enforcement by the Engineer could circumstantially amount to a breach of the employer's good faith obligations.

If the employer is aware in advance (of the expiry of the time bar) of the event giving rise to the contractor's claim, then having regard to its good faith obligations, the employer may not be able to rely on the contractor's failure to give notice as required by Sub-Clause 20.1.

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9.6.1 Evaluation of a particular lapse of claim

Every individual lapse of claim must be evaluated as a separate case in respect of the delivery method and related risk allocation, material substance of the claim and the limits imposed by governing law.

It should also be noted that it may be difficult to determine the point in time at which the claim lapse period starts running. Some events are difficult to identify as they occur during the course of a construction project and their onset will therefore remain unknown. Furthermore, under FIDIC, the notice shall be given as soon as practicable, and not later than 28 days after the contractor became aware, or should have become aware, of the event or circumstance, in respect of the possibility and ability to consider and evaluate the contractor's right to claim. In the recent case (under FIDIC P&DB/1999 Yellow Book) Obrascon Huarte Lain SA -v- Her Majesty's Attorney General for Gibraltar [2014] EWHC 1028 (TCC) the judge answered the question when the 28 days do (under Sub-Clause 20.1) start to run. The judge concluded that the entitlement to an extension of time arises if, and to the extent that, the completion 'is or will be delayed' by the various events. He mentioned that the extension of time can be claimed either when it is clear that there will be delay (a prospective delay) or when the delay has at least started to be incurred (a retrospective delay). He added that the wording in clause 8.4 is not 'is or will be delayed whichever is the earliest' so that notice does not have to be given for the purpose of Sub-Clause 20.1 until there is actually delay although the contractor may give notice with impunity when it reasonably believes that it will be delayed.

Many times, even a time-barred claim can be pursued through litigation or arbitration. However, the failure to make use of contractual claiming procedures may mean embarking upon the hazardous, complex and potentially costly road of litigation or arbitration. The one who does not follow the contractual procedures may be further liable for damages due to a breach of contractual obligations.

Condition precedent and time-barred claims under Polish Law by Michał Skorupski (Poland)

There is a notable debate nowadays in Poland concerning conditions precedent for claiming. A recent decision of the Court of Appeals in Warsaw of 14 March 2013 (VI ACa 1151/2012) ruled, that the 28-day notification period in relation to Sub-Clause 1.9 of the FIDIC Contract Conditions shall be calculated not from the date of the event or circumstance but from the date when the contractor had become aware of the fact of suffering additional cost from late delivery of a drawing or instruction. The court seems to have favoured the line of reasoning of the contractor, that it was not the lack of information itself (wrong drawings in the first place), but lack of proper co-operation of the employer and the engineer in solving the problem which ultimately had led to additional cost and delay.

Unfortunately, employers consequently try to escape their contractual responsibility of providing proper designs of the works and typically their engineers determine that the contractor had to analyse the documentation with due care soon after notice of commencement. Thus, the 28 days are counted from the commencement date. Furthermore, a typical EU-subsidised contract contains stipulations that 'the contractor has acquainted himself with the drawings and specifications, is satisfied with their quality and will not claim in this regard' – or similar. Fortunately, in several decisions, such clauses have been ruled to have no effect, as the contractor in a employer's design contract cannot be deemed to perform the role of a design verifier. This is the sole responsibility of the employer – according to the courts so far (see the award of 6 March 2013 of the National Appeal Chamber for Public Procurement, file: KIO 411/13, or the award of the Court of Appeals in Katowice of 18 October 2013, file: ACa 272/13). Unfortunately, the practice of using such provisions as quoted above still exists.

Nevertheless, the debate on condition precedent is far from over. There are many construction lawyers who argue that Article 118 of the Polish Civil Code determines the limitation period for construction claims to be three years from the event or circumstance, and the freedom of contracts cannot take priority over this statutory rule because of Article 119 of the Polish Civil Code that reads 'limitation periods cannot be shortened or extended by legal action'. Usually, the more the given lawyer's client forgets to notify the engineer about the circumstances in due time, the more entitled they feel to quote the Polish Civil Code afterwards.

Time limits for claims under Sub-Clause 20.1 can be seen as shortening the limitation period. This opinion was confirmed in the judgment of the District Court in Warsaw on 13 July 2011 (file: XXV C-701/10) and also on 11 June 2012 (file: XXV C-567/11) including the confirmation by the Court of Appeals (on 20 March 2013; file No. VI ACa-1315/12), where it was ruled, that the respective part of Sub-Clause 20.1 is invalid under Polish law. The argument being that: 'There is no reason to assume that the scope of freedom of contract goes so far as to allow for free creation of contractual deadlines causing the extinction of claims related to property, in particular, where such claims are subject to statutory regulation on limitation.'

On the other hand, there are several awards of the same court stating the opposite. For example, in the judgments of 6 June 2012 (file: XXV C-1215/10), of 7 March 2012 (file: XXV C-249/11) and of 30 April 2013 (file: XXV C-355/10). In the latter case it was argued that:

> In accordance with the general principle of freedom of contract stated in the Article 353 [1] of the Polish Civil Code it is possible to contractually agree a period of time after which the creditor's claim expires. This is not contrary to the Article 119 of the Polish Civil Code. The effects and functions of time bars and periods of limitation are different.

In conclusion, until some firm, Supreme Court precedent is in place, there remains great uncertainty in this area of the law. Therefore, it is highly recommended to strictly observe the notification periods provided in the given contract.

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Australian position on time bars by Andrew P. Downie (Australia)

Time bars are commonly used in construction contracts. Generally speaking, time bars stipulate the giving of notice of a claim, or a foreshadowed claim, by a certain time: in default of the stipulation, the person making the claim, which ought to have been the subject of the notice, loses the right to do so. In this vignette, the person obliged to give the notice is referred to as the claimant, and the person to receive the notice is referred to as the recipient.

In Australia, the courts consider time bars to have important purposes, including:

1. to enable a claim to be investigated promptly and perhaps before any work comprised in it is rebuilt or built over; and
2. to enable the recipient to monitor its exposure to the claimant, and if the recipient is a head contractor, to enable it to assess its own position with respect to the principal (*John Goss Projects v Leighton Contractors* (2006) 66 NSWLR 707).

A contractual provision will only be effective as a time bar where the provision makes it clear that if a claim for relief is not made or notified within a particular period or by a particular time, no claim may be made thereafter.

Construing time bars

The courts must be cautious in construing time bars in construction contracts because no case is decisive on the meaning of a particular clause in a contract: it is the words used in the relevant clause or clauses that are decisive (*Opat Decorating Service (Aust) Pty Ltd v Hansen Yuncken (SA) Pty Ltd* (1995) 11 BCL 360 at 363). However, there are many examples of standard form contracts in the construction industry, and in construing particular terms of a standard form contract a court should generally follow a construction established in previous cases unless that construction is plainly wrong or the context requires a different meaning (*Dunlop & Sons v*

Balfour, Williamson & Co [1892] 1 QB 507; *Toyota Motor Corp Australia Ltd v Automotive, Food, Metals, Engineering, Printing & Kindred Industries Union* (1999) 93 IR 95 at [60]). It is therefore reasonable to expect that where a court construes a particular time bar to have one meaning, when that time bar arises for reconsideration, the same meaning will be given to it unless the context requires otherwise.

Examples of common time bars

Four prominent examples of time bars considered by the courts are set out below. The first is NPWC Edition 3 'residual' Clause 47:

> The Contractor shall not be liable upon any claim by the Sub-Contractor in respect of any matter arising out of this contract unless the claim, together with full particulars thereof, is lodged in writing with the Contractor not later than fourteen (14) days after the date of the occurrence of events or circumstances on which the claim is based or written notice of intention to make the claim specifying the nature of the claim is lodged with the Contractor within that time and the claim, together with full particulars thereof, is lodged in writing with the Contractor not later than fourteen (14) days before the issue of the Final Certificate under the Head Contract.

The New South Wales Supreme Court considered this clause in *Jennings Construction Ltd v QH&M Birt Pty Ltd* [1986] 8 NSWLR 18. There, the appellant was a builder and the respondent an earthworks subcontractor. An arbitrator decided that the respondent was entitled to payment for work in creating materials for the particular level of compaction required under the contract, and the work involved in creating the materials was not specified in the contract. On appeal, Smart J held that claims for this work ought to have been notified, and the decision was remitted to the arbitrator for reconsideration.

This clause, together with a specific extension of time clause, were considered by the Full Court of the Supreme Court of South Australia in an appeal on a preliminary issue in *Opat Decorating Service (Aust) Pty Ltd v Hansen Yuncken (SA) Pty Ltd* (1995) 11 BCL 360. There, the court held that compliance with the clause was mandatory, and it was a condition precedent.

Second, the bespoke clause in *John Goss Projects v Leighton Contractors* (2006) 66 NSWLR 707:

> 45.1 Notwithstanding any other provision of the Works contract to the contrary, [the Principal] will not be liable upon any claim by the Contractor in respect of any matter arising out of the Works Contract or otherwise but not limited to variations to the work under the Works Contract and claims for damages unless: (a) the claim together with full particulars thereof is lodged in writing with [the Principal] not later than ten (10) Business Days after the date the Contractor became aware or should have reasonably become aware of the occurrence of the events or circumstances on which the claim is based; or (b) written notice of intention to make the claim specifying the nature of the claim is lodged with [the Principal] within that time and the claim, together with all particulars thereof, is lodged in writing with [the Principal] before the Date of Substantial Completion.

In *John Goss*, a subcontractor served a payment claim on the contractor inclusive of $2 million of delay and disruption costs. The contractor responded with a payment schedule denying liability for the delay and disruption costs. The dispute was referred to adjudication (twice) and the subcontractor alleged that Clause 45 was void because it was inconsistent with the rights in the New South Wales security for payment legislation, the Building and Construction Industry Security of Payment Act 1999 (NSW). McDougall J held that compliance with Clause 45.1 is a condition precedent of any claim over and above the contract amount, and acts as a bar to claims if the notice provisions are not followed.

Third, the bespoke contract in *City Inn Ltd v Shepherd Construction Ltd* [2003] BLR 468:

> 13.8.1. Where, in the opinion of the contractor, any instruction, or other item which, in the opinion of the contractor, constitutes an instruction issued by the architect, will require an adjustment to the contract sum and/or delay the completion date, the contractor shall not execute such instruction (subject to Clause 13.8.4 [dispensation with requirement to give notice]) unless he shall have first submitted to the architect, in writing, within ten working days (or within such other period as may be agreed between the contractor and the architect of receipt of the instruction, details of [estimates of the adjustment, additional resources, length of extension of time, and loss or expense].
>
> 13.8.5. If the contractor fails to comply with any one or more of the provisions of Clause 13.8.1, where the architect has not dispensed with such compliance under Clause 13.8.4, the contractor shall not be entitled to any extension of time under Clause 25.3.

In *City Inn*, the contractor claimed to have been delayed and sought an extension of time. The architect allowed an extension of four weeks, and the question of entitlement was referred to an adjudicator who decided that the contractor was entitled to an additional five weeks. The principal claimed that the contractor did not comply with the notice provisions in Clause 13.8.1 and therefore they were barred from any entitlement as a result of Clause 13.8.5. The contractor argued that Clause 13.8.5 was a penalty because it caused the imposition of liquidated damages on failure of the contractor to give notice. The Scottish Court of Session held that the failure to comply with the notice provision did not amount to a breach of contract, but the clause gave the contractor an option to take certain action if they seek the protection of an extension of time in the circumstances in which the clause applies. Further, the requirement in Clause 13.8 was a condition precedent to it gaining an entitlement to claim an extension of time, and the contractor was barred from a claim.

Fourth, the standard form AS 2124-1978, Clause 40.2:

> If, in the opinion of the Contractor, compliance with the Superintendent's [variation] order, pursuant to this Sub-Clause, is likely to prevent him from or prejudice him in fulfilling any of his obligations (including guarantees) under the Contract, he shall forthwith notify the Superintendent thereof in writing, and the Superintendent shall as speedily as is practicable determine whether or not his order shall be complied with. If the Superintendent determines that his order shall be complied with, he shall also determine the extent to which the Contractor is to be relieved of his obligations under

> the contract and thereafter confirm his order in writing to the Contractor and such confirmation shall contain particulars as to the extent to which the Contractor is to be relieved of his obligations under the Contract.

This clause arose for consideration in *Wormald Engineering Pty Ltd v Resources Conservations Co Internationals* (1989) 8 BCL 158 in which the superintendent made a number of variation orders and the appellant carried out these works and was paid the cost of the actual work done. However, the payments did not take into account the effect that the additional work would have on the contract, nor the costs of the cumulative effect of the dislocated work. The contractor did not make a written claim for these amounts pursuant to Clause 40.2. However, during arbitration, the appellant claimed around $400,000 in respect of additional costs resulting from the variations. The arbitrator held that Clause 40.2 was a condition precedent and rejected the claim. On appeal, Rogers CJ noted that the purpose of the clause was to give the respondent the opportunity to make an informed assessment about whether to require the variation to proceed, and that an action for breach of the requirement for notice would not be a satisfactory solution. Rogers CJ therefore confirmed the arbitrator's decision.

In respect of the time bar clauses discussed above, in each instance of judicial consideration, the particular court has held that the relevant clause imposes a condition precedent to a claim that ought to have been (but was not) the subject of the notice.

Consequences of failure to give notice

There are two potential consequences of non-compliance with the above time bars depending on their terms:

- loss of an extension of time for delay caused by the relevant event; and/or
- loss of the right to claim costs incurred for additional work or loss caused by the relevant event.

The failure to give notice pursuant to a time bar that otherwise enables the contractor to claim an extension of time will usually cause the claimant to be exposed to liquidated damages for the delay caused by the event that ought to have been the subject of that notice. Although a consideration of the 'prevention principle' is beyond the scope of this vignette, it is sufficient to say that the modern position of Australian courts is that the failure of a claimant to issue a notice claiming an extension of time in respect of the recipient's preventing conduct is usually fatal to the claimant's argument that time is set 'at large' by that preventing conduct (*Turner Corporation Ltd v Austotel Pty Ltd* (1994) 13 BCL 378 and *Turner Corporation Ltd v Co-ordinated Industries Pty Ltd* (1995) 11 BCL 202). Because of this, the failure to issue a notice could have a catastrophic financial impact upon a claimant.

Australian penalty doctrine and time bars

The High Court of Australia's decision of *Andrews v Australia and New Zealand Banking Group Ltd* (2012) 247 CLR 205 has been regarded by some commentators as supporting an argument that time bars are unenforceable as penalties, thereby giving relief to a contractor who has not given the appropriate notice so as to avoid the time bar.

The High Court in *Andrews* reviewed the history of the penalty doctrine, clarified the Australian position on the penalty doctrine and expressed that it is not restricted to instances of breach of contract. The High Court arrived at a formula for the penalty doctrine as follows:

> In general terms, a stipulation prima facie imposes a penalty on a party ('the first party') if, as a matter of substance, it is collateral (or accessory) to a primary stipulation in favour of a second party and this collateral stipulation, upon the failure of the primary stipulation, imposes upon the first party an additional detriment, the penalty, to the benefit of the second party. In that sense, the collateral or accessory stipulation is described as being in the nature of a security for and *in terrorem* of the satisfaction of the primary stipulation. If compensation can be made to the second party for the prejudice suffered by failure of the primary stipulation, the collateral stipulation and the penalty are enforced only to the extent of that compensation. The first party is relieved to that degree from liability to satisfy the collateral stipulation.

This decision was an appeal from a class action brought by bank customers over fees charged by a bank on the happening of certain events. The fees included 'honour fees', 'dishonour fees', 'overlimit fees' and 'late payment fees'. The customers claimed that these fees were penalties and therefore unenforceable. The primary judge held that only the fees that arose from breach of contract, being the late payment fees, were capable of being characterized as penal, because the penalty doctrine is restricted to instances of breach of contract. On appeal, the High Court clarified that the penalty doctrine was not so restricted because of its foundations in equity in relieving from penal bonds.

The decision in *Andrews* appears to have caused the Australian position on the penalty doctrine to differ from the English position. The latter requires a breach of contract as a prerequisite to the doctrine applying (*ECGD v Universal Oil Products Co and Ors* [1983] 2 All ER 205).

As noted in *City Inn* above, the failure to give notice required by a time bar may not amount to a breach of contract, which was the primary reason why the relevant clause in *City Inn* was not considered to be a penalty. It has been suggested that the *Andrews* decision could cause many time bars to be held unenforceable because they appear to fit within the *Andrews* formula, above. That is, a time bar usually contains a requirement to give notice of a claim (said to be the primary stipulation), and usually provides for the loss of entitlement to claim if the notice is not given (said to be the collateral stipulation and additional detriment). This view has not received universal support. Also, given the decision in *City Inn*, and a number of Australian and English decisions that are to the effect that the penalty doctrine is not engaged where the entitlement that is lost is not yet accrued (e.g. *Bysouth v Shire of Blackburn and Mitcham (No 2)* [1928] VLR 562 and *SCI (Sales Curve Interactive) Limited v Titus Sarl* [2001] 2 All ER (Comm) 416), it is unclear to what extent this reformulation of the penalty doctrine could apply to a time bar that is drafted as a condition precedent.

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The particular governing law will strongly influence time bar-related issues. It is therefore very interesting to compare the opinions of lawyers from different countries at http://globalarbitrationreview.com. They were asked the following questions:

- How do contractual provisions that bar claims (if not validly notified) within a certain period operate (including limitation or prescription laws that cannot be contracted out of, interpretation rules, any good faith principles and laws on unfair contractual terms)?
- What is the scope for bringing claims outside the written terms of the contract under provisions such as Sub-Clause 20.1 of the FIDIC CONS/1999 Red Book ('otherwise in connection with the contract')?
- Is there any difference in approach to claims based on matters that the employer caused and matters it did not, such as weather or ground conditions?
- Is there any difference in approach to claims for (a) extensions of time and relief from liquidated damages for delay and (b) monetary sums?

They responded thus:

- *Brazil*: Claims based on circumstances not validly notified are unlikely to be accepted by courts and arbitral tribunals. Contractual provisions containing such limitations do nothing more than set a time limit for those claims. Claims outside the written terms of the contract may be brought as long as the object of the claim has nexus with the main contractual relationship. A case-by-case analysis is therefore required. When it comes to weather and ground conditions, it depends on the terms of other clauses of contracts dealing with *force majeure* events. As for the last question, there may be an impact on liquidated damages for delay because the time bar may limit the chance of gaining relief. Monetary sums, if they have been agreed to previously, should not be affected, unless such claim is based on the fact that it took place after the period designated in the contract (Marcondes, Salla, Nakagawa, and Diniz at http://globalarbitrationreview.com).
- *England and Wales*: Normally such provisions are operated in accordance with their terms. However, they do constitute exclusion/limitation clauses and may therefore be subject to the *Unfair Contract Terms Act* 1977. As exclusion clauses, time bar provisions may be used against the party seeking to rely upon them (the authorities conflict on this) subject to the conditions that: (a) they can bar claims based upon causes of action outside the contract; and (b) there is no difference in approach depending upon whether the claims are based upon matters which the employer caused as opposed to matters which they did not or upon which the claim was made for an extension of time or payment of money. However, a strict approach to the interpretation of the clause could produce different results in different circumstances (e.g., the adequacy of a notice where the employer was the cause as opposed to where a third party was the cause) (Choat and Long at http://globalarbitrationreview.com).
- *France*: The effect of time-bar provisions will depend on the wording of the contract and the intention of the parties. Such clauses should, however, be exercised in good faith. In practice, French courts tend to give effect to contractual

provisions that bar claims if they are not validly notified within a prescribed period. Courts have not drawn specific distinctions between claims based on matters that the employer caused and on matters it did not or between claims for extensions of time and claims for additional payment (Gillion and Rosher at http://globalarbitrationreview.com).

- *Germany*: The parties are free to raise claims outside the express terms of the construction contract unless the contract explicitly limits recourse and claims to those explicitly listed in the construction contract. If the contract provides for a notification regime, failure to notify a claim within such regime will – as a general rule – preclude the claim from being pursued. Nevertheless, the notification requirements, their formalities and the extent of failing to comply with them may be dealt with by the 'good faith' principles. For example, a party materially in default may be barred from relying on the objection that a default was notified too late or 'technically' incorrect (Kremer at http://globalarbitrationreview.com).
- *Ireland*: Time bar provisions are effective and upheld under Irish law. Thus they are commonly found in Irish construction contracts. The standard Irish forms do not make express reference to the notification of a claim being a condition precedent to the contractor's right to recovery but they are commonly amended by the parties to include such a provision. The Irish Public Works contracts have very prescriptive time bar provisions and can extend to notification of 'any other entitlement the contractor has under or in connection with the contract'. Generally, the notification of both employer-caused events and natural events are dealt with in the same manner under Irish standard forms of construction contracts. Under the Irish public works contracts, a claim based on weather or ground conditions generally gives rise to an entitlement to an extension of time but not to monetary compensation. The Irish public works contracts provisions regarding notifications of claims and time bars are more prescriptive and stringent on claims for monetary sums as opposed to claims for extensions of time. Certain bespoke forms have equally stringent time bar provisions both in respect of claims for time and money – with both having been upheld by the courts (Killoran, O'Higgins and Cooney at http://globalarbitrationreview.com).
- *Korea*: (1) Right to a claim can only be waived if such intent is clearly stated in writing under Korean law. However, notification provisions that bar claims if such claims are not validly notified within a certain period are generally enforceable. An exception may be if a court finds the existence of unavoidable circumstances based on the principle of good faith. (2) In order to bring claims from outside the scope of the contract, such claims need to be based on applicable laws and satisfy any statutory limitation provided under such laws. (3) Approach may be different based on a court's interpretation of the principle of good faith. (4) Claims for an extension of time can only be used as a defence against other claims and cannot be used as an affirmative claim for relief in Korea (Oh and Park at http://globalarbitrationreview.com).
- *Qatar*: Article 418(1) of the *Civil Code* stipulates that contracting parties may not agree upon a prescription period different to that prescribed by law. Denial of access to justice is also prohibited, under general principles of Qatari law. As such, one could argue that brief claims notification periods in construction

contracts contravene the mandatory provisions of Article 418 and are therefore unenforceable as a matter of Qatari law. However, it could also be said that by agreeing to include such notice periods in a contract, the parties are waiving their underlying rights, rather than waiving their entitlement to claim those rights (i.e., their right of access to court, which cannot be prescribed other than in accordance with the law). Much would depend here on the wording of the contractual provision in question. No claims may be brought under the contract other than those arising from the performance by the parties of their respective obligations as set out in the contract. A contractor has no right to claim against an employer for matters not caused by the latter, or for which the employer did not contractually assume the risk. Qatari law does not recognize the concept of an extension of time *per se*. Claims for EOT are not pursued to vindicate a stand-alone substantive right, rather they aim to achieve one or both of two principal objectives: (1) to defeat or minimize a demand for payment of compensation in the form of liquidated damages; or (2) to claim for prolongation costs. In principle, the right to claim an EOT – which, in essence, concerns compensation – can validly be prescribed by contract. Insofar as they relate to variations, claims for money (for additional work performed) cannot be so prescribed (Al Naddaf, Kelly at http://globalarbitrationreview.com).

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10 Claim Management

10.1 Claim management

In construction projects, it is very important to solve problems that can influence price or time for completion as soon as they are encountered (or even earlier to avoid or mitigate the consequences) while all equipment, human resources, and witnesses are still on site. Negative consequences of specific hazards are allocated in the form of a risk to the parties by contract. If a risk is allocated to one party, the other party may usually claim additional payment or extensions of time after such risk is realized.

It is common in international construction contracts for parties who consider themselves to be entitled to a claim to be under a duty to notify it. This notice can draw attention to the problem. The duty to notify creates a natural responsibility to keep contemporary records. This brings with it a higher probability that faster solutions will be implemented (to mitigate consequences) and problems resolved in a timely manner.

A structured claim management system also prompts the contract administrator (the engineer), the employer, the contractor and others involved in a construction project to respect and take claims seriously. They must follow the contractual claim procedure, document events, report and quantify the consequences by paying more attention to the claims and related site inspections and investigations.

The claim management is, in the most general sense, created by being able to identify, document and quantify a claim. It is strongly recommended to commence claim preparation and administration from day one, i.e. from receipt of the tender invitation by the contractor. Well-experienced contractors, engineers and employers prepare themselves for every individual project prior to its commencement by using a set of checklists, organizational charts and sample forms of letters that facilitate future claim management.

The principles of claim management are also discussed in case law. For example in *Attorney General for the Falkland Islands v. Gordon Forbes Construction Limited* and *National Insurance Property Development Co Ltd v. NH International (Caribbean) Ltd*. Particular claims usually correspond to damages caused by the employer,

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the contractor or external grounds. When proving damages, one has to deal with difficulties based mainly on the three following problems: causation, concurrency and calculation. The subject of causation will be dealt with in connection with *global claims* (discussed below in Section 10.6), the subject of concurrency will be touched on in connection with *concurrent delay* (Chapter 7) and the difficulties with calculation will be dealt with in *Headquarters Overhead Claims* (also discussed below in Section 10.4.1). Causation, concurrency and calculation issues lead to uncertainty in the way the tribunals decide about claims for damages.

While there is no easy solution that can overcome these difficulties, if the parties are aware of the uncertainty, they can take steps at an early stage to assess the best way to establish the claim before a particular tribunal. This means that the party can carry out the necessary analysis to formulate a robust position and assess the risks which will increase the likelihood of successfully establishing the claim (Ramsey, 2013). The best place to prepare a strong claim is at the construction site itself provided that contemporary records of delay, disruption and their respective effect on costs is up-dated in the time programme and progress reports.

An application for damages (whether in a court or via a claim submission), can be both confusing and tedious. Since the purpose of a claim is the recovery of damages, making the application clear, simple, and easily understandable is extremely important. The damages claimed should, whenever possible, reference and tie to the contractor's accounting documents and records. This provides evidence which can be verified and accessed. Damages that cannot be traced to accounting records are immediately suspect, no matter how reasonable the amount claimed may seem. There is a tendency for damages to be overstated in a claim submission, with the idea that it can later be negotiated down to a more realistic but still acceptable amount. However, this approach is not advisable, as the claimant will lose credibility and will eventually have to explain the discrepancy between the claim amount and the amount sought at trial (Schwartzkopf and McNamara, 2001).

There are three types of claims in general, i.e. claims for:

- extension of time (EOT);
- additional payment;
- extension of time and additional payment.

10.2 Claims for Extension of Time (EOT)

In some situations, the contractor can claim extensions of time for completion. It is in fact a defence against contractual penalty/delay damages filed by the employer and a form of risk sharing in some of situations such as extremely adverse weather. The position of the SCL Protocol on the purpose of extension of time is that the benefit to the contractor is only to relieve them of liability for damages for delay for any period prior to the extended contract completion date. The benefit of an EOT for the employer is that it establishes a new contract completion date and prevents time for completion of the works becoming 'at large.' Entitlement to an EOT does not automatically lead to an entitlement to compensation. The parties should attempt – as far as possible – to deal with the impact of employer risk events as the work proceeds

in terms of EOT and compensation. Where the full effect of an employer risk event cannot be predicted with certainty at the time of the initial assessment by the contract administrator, the contract administrator should grant an EOT for the then predictable effect.

The employer usually claims an extension of the defects notification period in terms of time (under Sub-Clause 2.5 in the FIDIC forms). Under the FIDIC forms (CONS/1999 Red Book), the contractor may claim an extension of time for completion under Sub-Clause 8.4. The contractor is entitled (subject to Sub-Clause 20.1) to an extension of the time for completion if and to the extent that completion is or will be delayed by any of the following causes:

1. Variation (unless an adjustment to the time for completion has been agreed in the variation procedure) or other substantial change in the quantity of an item of work.
2. Cause of delay giving an entitlement to an extension of time under another Sub-Clause (mainly Sub-Clauses 1.9 (late information, instruction, delayed drawings), 2.1 (denied or late access or possession to site), 4.7 (errors in setting out information), 4.12 (unforeseeable physical conditions), 4.24 (fossils), 7.4 (testing), 8.5 (delays caused by authorities), 8.9 (engineer's instructions to suspend work), 10.3 (interference with tests on completion),16.4 (termination by contractor), 17.4 (employer's risks), 19.4 (*force majeure*), or 19.6 (optional termination)).
3. Exceptionally adverse climatic conditions.
4. Unforeseeable shortages in the availability of personnel or goods caused by an epidemic or governmental actions.
5. Any delay, impediment or prevention caused by or attributable to the employer, the employer's personnel (including the engineer who is listed as employer's personnel under Sub-Clause 1.1.2.6.), or the employer's other contractors on site.

If the contractor considers themselves to be entitled to an extension of time for completion, the contractor shall give notice to the engineer in accordance with Sub-Clause 20.1. When determining each extension of time under Sub-Clause 20.1, the engineer shall review previous determinations and may increase, but shall not decrease, the total extension of time.

If the contractor obtains an extension of time, they may be in a position to recover costs associated with the delay. However, there is no link (obligation) between Sub-Clause 8.4 and additional payment.

The contractor must keep proper records of the consequences of the event causing the claim in order to prove it. Documentation and reporting must follow the particular contractual provisions. For example, the contractor must keep records of labour, materials, equipment, progress reports, photographic and video documentation.

The importance of a maintained, detailed and up-to-date time schedule should be noted here. A claim for extension of time for completion is often submitted along with the updated time schedule detailing how and to what extent the claim events have influenced the individual construction works and relationship between activities. Critical paths in the time schedule are then explored together with floats, if any.

In the event of extremely adverse climatic conditions, for example, the contractor shall submit records of the weather encountered which can then be checked against the official statistics of the local bureau of meteorology.

10.3 Claims for additional payment

Related to claims for additional payment, it is important to explain how the bids are priced (see Chapter 6). Pricing methods may vary, depending on the practices used within a particular company. The pricing method which enjoys widest use is based on a calculated unit cost which is then increased by a per-cent surcharge.

The bid price is usually a total sum of the direct costs of equipment, material and labour, indirect costs of site overhead, headquarters overhead, risk and profit surcharge. Most frequently, a claim for additional payment rests on the documented direct costs plus overhead and profit surcharge.

Under FIDIC forms (Sub-Clause 1.1.4.3, for example), 'cost' means all expenditure reasonably incurred (or to be incurred) by the contractor, whether on or off site, including overheads and similar charges, but does not include profit. Profit is allowed only in specific claims, i.e. usually those where there is an employer default.

These surcharges should be defined or agreed for the purposes of claims quantification. It should further be noted that the terms 'cost', 'expenditure' and 'overhead' could be interpreted differently in particular jurisdictions. For example, these terms may be interpreted in the common case law sense (see *Hadley v. Baxendale* (1854) 9 Ex. 341) or in the civil law sense (see *Compagnie Interafricaine de Travaux v. South African Transport Services and Others* (680/89) [1991] ZASCA 16; 1991 (4) SA 217 (AD); (21 March 1991).

With every claim, the first test to be done is the test of liability, i.e. does the other party bear the risk of the particular hazard subject to claim? If so, it must be examined and potentially compensated.

The contract defines what claims the aggrieved party is entitled to and if there is also an entitlement for an additional payment. The claims for additional payment must be further subdivided into claims for:

- direct cost;
- direct cost and overhead;
- direct cost, overhead and profit.

The structure of a particular claim for additional payment depends on the wording of the contract and/or the governing law.

In its most general form, the heads of contractor's claim for additional payment would include:

- claims resulting from variations;
- claims resulting from delay and/or disruption under the particular provisions of the contract;
- claims resulting from governing law.

The employer usually claims delay damages, liquidated damages (or contractual penalties) and an additional payment caused by a lack of quality (price reduction) because the works are not performed to the agreed standard.

10.3.1 Claims resulting from variations

The employer usually has the right to order the contractually defined and allowed variations. The contractor, in contrast, has the right to compensation in terms of time and price. In some cases, variations are managed smoothly via the agreed variation orders. A complication often appears where one of the parties is breaching the contract or where contractual interpretation is unclear. In such cases, a routine variation procedure may become a claim for an additional payment and/or extension of time for completion.

To distinguish the contractor's individual claims for additional payment or for an extension of time for completion as a result of a variation, the following situations can be defined:

- directed variation;
- constructive variation;
- voluntary variation.

For more details, see Chapter 8 (including acceleration claims).

Acceleration is an example of a claim for additional payment (but not additional time).

10.4 Claims resulting from delay and/or disruption under the provisions of the contract

The question of particular claims under the contract and time bars was discussed in Chapter 9. In the following part, the specific heads of claims will be discussed. See also the *Table of Contractor's and Employer's Claims* under FIDIC CONS/1999 Red Book in Appendix D4. Many of those claims are typically both for an extension of time and additional payment.

10.4.1 Delay claims

If stipulated in the contract, an extension makes it possible for the contractor to claim an additional payment – particularly in the following circumstances:

- increased variable costs for site overhead expenses;
- increased variable costs for headquarters overhead expenses;
- pass through claims where a subcontractor usually claims disruption (if working under worse conditions) or when working overtime and wants to be compensated for increased variable costs;
- lost profit;

- financial costs and interest claims;
- increased cost of material, labour and equipment;
- claim preparation costs.

Site overhead claims

It was mentioned above that the contractor prices the bid to include site overhead expenses. These expenses are often aggregated within the individual items in the bill of quantities and tend to cover operation of the site facilities, the wages of the project team management and other personnel costs, the rentals for offices and the like. Higher site overhead expenses on the contractor's side typically occur due to the extended time for completion. However, the contractor does not include these expenses in the bid price as the above items are time-dependent. Whenever submitting a claim, the contractor must, if it is possible, identify these expenses in the bill of quantities (if any) and document the actual direct costs as they arise. An agreed surcharge as the case may be (such as profit, headquarters overhead, and so on) is usually allowed.

Examples of costs of running the site for an extended duration include:

- site staff (including personnel costs and accommodation)
- site facility and accommodation
- attendant labour
- utilities
- plant & small tools
- communications
- reprographics
- insurance
- catering
- temporary electrics
- skips/rubbish removal
- scaffolding
- stationery/postage.

Considerations related to site overhead claims by Gary Kitt (UK)

Before compiling a site overhead claim it is necessary to consider the following:

- cost or value;
- period for which claim is to be made;
- allocation of resources.

Cost or value

If a delay is likely to be caused (under the FIDIC forms) by a variation and the engineer requests a variation proposal (under Sub-Clause 13.3), then this arguably opens the door for a Contractor to value prolongation other than by applying cost, seeing as it is left to the contractor to propose an evaluation.

The simplest way to frame a claim for prolongation is to apply a simple percentage addition to the cost of the variation based upon the allowance for time-related items within the contract

price. While this might seem an attractive proposition, there is the real risk that it would not represent the true cost of delay.

Alternatively, in a situation where the contract price does not include specific identifiable sums for site overheads, that is to say site overheads are allowed within the rates within the Bill of Quantities (BoQ), a contractor could calculate a daily rate for prolongation which would encompass all time-related items.

FIDIC Sub-Clause 20.1 refers to the contractor seeking additional payment under any clause of the conditions or otherwise.

For claims made under any of the clauses of the conditions the contract defines 'cost' as 'all expenditure reasonably incurred (or to be incurred) by the contractor, whether on or off the site, including overhead and similar charges, but does not include profit'. In these instances a contractor would generally expect to recover additional payment for the above based on its actual incurred cost.

Compilation of prolongation claims can be time-consuming as it is necessary to identify specific time-related resources over the course of the project.

Period of claim

Another important point to address is when the delay actually incurred as the contractor's claim ought to be for those resources affected at the time that the delay was incurred rather than, as we have seen many times, claiming for the resources on site during the period of overrun beyond the stated time for completion.

Allocation of resources

A further complicating factor is allocation of resources to specific activities or locations in the situation where not all supervisory resources can be said to have been delayed as a result of the event leading to the claim.

By way of example, a new highway might consist of roadworks and construction of structures. In such a case it is necessary to ensure that, if the works to the roadworks are critically delayed, the claim consists of only those overhead resources that are project-wide, such as the Project Director or site secretary and those specifically working on the affected section of the road. The significance of this is that the contractor needs to maintain good records of its management and supervision allocated to the individual elements of the project. 'Core' overhead, i.e. project-wide management and supervisory resource and 'task' and 'work' related resources must be distinguished. Having established the total time-related resources, it is necessary to separate these into the categories of core- or task-related. It is only the core plus – the relevant portion of the task overhead that should be claimed as part of the claim for prolongation costs. The work-related resources are those whose cost is recovered through the BoQ rates.

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In terms of the above-mentioned period for evaluation of compensation, the position of the SCL Protocol is that once it is established that compensation for prolongation is due, the evaluation of the sum due is made by reference to the period when the effect of the employer risk event was felt, not by reference to the extended period at the end of the contract.

Where a delay in a large construction project occurs, it is often the case that a contractor and engineer (contract administrators) and the employer will hire additional supervisory and management staff to deal with the issues that have arisen. When this happens, claims will often be made for additional payment in respect of those resources that are in addition to that anticipated to be required.

Headquarters overhead claims

It was already stated that the contractor (and in certain situations also the employer) is entitled to be compensated for indirect costs in the form of increased, unabsorbed headquarters overhead expenses if, for example, the work completion date is extended or disrupted because of reasons on the employer's side. This is because extra payment for such a prolongation by the contractor has not been included in their bid price. This form of recovery received judicial approval in the case *Alfred McAlpine Homes North Ltd v Property and Land Contractors Ltd 1995 76BLR59*. At paragraph 70G of the judgment, HHJ Humphrey Lloyd QC explains:

> The theory is that because the period of delay is uncertain and thus the contractor can take no steps to reduce its head office expenditure and other overhead costs and cannot obtain additional work, there are no means whereby the contractor can avoid incurring the continuing head office expenditure, notwithstanding the reduction in turnover as a result of the suspension or delay to the progress of the work. The reduced activity no longer therefore pays its share towards the overhead costs.

In order for such a claim to succeed, it is necessary for a contractor to prove the following:

> The loss in question must be proved to have occurred. The delay in question must be shown to have caused the contractor to decline to take on other work which was available and which would have contributed to its overhead recovery. Alternatively, it must have caused a reduction in the overhead recovery in the relevant financial year or years which would have been earned but for that delay. The delay must not have had associated with it a commensurate increase in turnover and recovery towards overheads. The overheads must not have been ones which would have been incurred in any event without the contractor achieving turnover to pay for them. There must have been no change in the market affecting the possibility of earning profit elsewhere and an alternative market must have been available. Furthermore, there must have been no means for the contractor to deploy its resources elsewhere despite the delay. In other words, there must not have been a constraint in recovery of overheads elsewhere.

Where the parties have not agreed in advance on a definitive percentage or other amount for the head office overheads, the amount for overheads can usually (but not always) be evidenced by reference to pricing information supporting the tender or by using the contractor's audited accounts. If the accounts used are for prior years (i.e. other than the period during which the works were carried out), care should be taken to ensure that the attribution of overheads to the project is appropriate and not inflated. In practice, the hardest of the tests to satisfy when valuing head office overheads is the 'but for' test (that is to say; 'but for this delay, would the contractor have been able to recover additional monies in respect of the (claimed) overhead costs by taking on other work?'). Put another way, was the contractor deprived of the opportunity to mitigate these costs by, say, making staff redundant sooner? Proof that the contractor was turning work away because of the delay to a particular project may be found by reference to the contractor's order books, invitations to tender and general market conditions (Kitt and Fletcher, 2013).

Various formulas are also used to quantify the head office overhead because of the difficulty of exact assessment. The reason is the difficulty or impossibility of identifying the headquarters overhead for a particular contract in the bill of quantities as it consists of the expenses incurred by the contractor's administrative units (such as top management, office staff and services). These administrative units concurrently handle a large number of projects and the related allocation of costs can be very complicated and, in many cases, impossible.

Ideally, a contractor would keep records of all activities carried out by head office personnel but this seldom happens in reality. To help solve this problem, UK courts appear reasonably happy to assess loss based upon industry-recognized formulas (Kitt and Fletcher, 2013).

The best-known and most widely used formulas for determining claims for costs incurred in connection with overhead increases are the *Hudson Formula* and the *Emden Formula*. The Hudson Formula comes from the *Hudson's Building and Engineering Contracts* publication. This publication is traditionally used as a source of information by lawyers and civil engineers worldwide (Dennys et al., 2010).

The Hudson Formula, for example, won recognition in the case *J F Finnegan v. Sheffield City Council (1988) 43 BLR*. Sir William Stabb QC sitting as Official Referee stated:

> It is generally accepted that, on principle, a contractor who is delayed in completing a contract due to the default of his employer, may properly have a claim for head office or offsite overheads during the period of delay, on the basis that the work-force, but for the delay, might have had the opportunity of being employed on another contract which would have had the effect of funding the overheads during the overrun period.

There are other formulas, such as the Ernstrom, Manshul, Carteret and Allegheny formulas – all derived from the cases where they have been used. They are mostly variations of the Hudson Formula. The Eichleay Formula is the most widely used in public contracts in the United States.

The subject of formulas is connected to the certainty of damages which was discussed in a more general sense in the cases *Canadian case of Wood v. Grand Valley*

Railway Company (1915) 51 SCR 283 and *Chaplin v. Hicks* [1911] 2 KB 786 where the English Court of Appeal held:

> I do not agree with the contention that, if certainty is impossible of attainment, the damages for a breach of contract are unassessable … I only wish to deny with emphasis that, because precision cannot be arrived at, the jury has no function in the assessment of damages … In such a case the jury must do the best they can, and it may be that the amount of their verdict will really be a matter of guesswork. But the fact that damages cannot be assessed with certainty does not relieve the wrongdoer of the necessity of paying damages for his breach of contract.

Often imprecise documentation evidencing damages lead to the need for an 'assessment' by the judge based on the particular submissions of the parties to the dispute. The main issue is the uncertainty of the outcome caused by the different approaches of judges, arbitrators and adjudicators in particular jurisdictions and by the lack of universally accepted methods of delay and disruption analysis. Because of this, the use of expert evidence to support a quantum claim is widespread in international arbitration. Very often, the engagement of the expert is used as a means of presenting the case on quantum rather than limiting the expert's involvement to purely expert accounting issues or matters which require expertise in assessing the sum to be claimed (Ramsey, 2006).

As with global claims, this approach to damages calculation (use of formulas) may be viable in common law litigation, DAB or arbitration but can be difficult in civil law litigation where judges strictly require precise evidence of damage via detailed documentation including causation.

It must be pointed out however that in the majority of civil law jurisdictions and under UNIDROIT principles however if the amount of the claim can only be determined with difficulty or cannot be determined at all, the court shall determine it at its sole discretion and where the amount of damages cannot be established with a sufficient degree of certainty, the assessment is at the discretion of the court.

The SCL Protocol also proposes some best practice guidance in terms of head office overhead. It divides head office overhead into: *dedicated overheads* through which administrative costs are assigned on the basis of good record keeping, and *unabsorbed overheads* (such as rent and some salaries) which are incurred by the contractor regardless of their work volume. Unless the terms of the contract make unabsorbed overheads irrecoverable, they are generally recoverable as a foreseeable cost resulting from prolongation. The contractor must then be able to demonstrate that because of employer risk events they were prevented from taking on other overhead-earning work.

The authors of the SCL Protocol recommend the Emden and Eichleay formulas. The authors further recommend that when the formulas produce an inaccurate or unsuitable result, verification is required by using another formula. At http://www.eotprotocol.com are guidelines for determining unabsorbed overhead claims. The guidelines are a useful tool because they take into account a number of variables.

In its original form, the Hudson formula appears as follows:

$$\frac{\text{Headquarters overhead \& profit \%}}{100} \times \frac{\text{Project price}}{\text{Construction time}} \times \text{Delay}$$

The Emden formula is as follows:

$$\frac{\text{Total overhead \& contractor's profit}}{\text{Total contractor's turnover}} \times \frac{\text{Project price}}{\text{Construction time}} \times \text{Delay}$$

In the USA, the Eichleay formula is used to recover unabsorbed home office overhead expense. In *Mech-Con Corp. v. West,* 61 F.3d 883, 14 FPD _ 65, 19 C.C. _ 395 (Fed. Cir. 1995), this formula was also used to evaluate damages arising from a suspension of work. The contractor established a *prima facie* case for Eichleay damages by showing:(1) the existence of a government-imposed delay; and (2) that the delay was for an uncertain period during which the contractor had to stand ready to complete the work. Because the delay was of an uncertain duration, the contractor did not have to prove that it was unable to take on other work during the period, or that it was unable to reduce its overhead. When the contractor can show that it was required to remain on standby during a period of uncertain government-imposed delay, the burden shifts to the government to show that the contractor could have reduced its overhead or taken on other work.

Subcontractor claims

A large part of a contractor's claim can be made up of subcontractors' claims. Contractors will often reach commercial settlements with their subcontractors because of the difficulty in identifying precisely what part of the settlement figure relates to the delay event in respect of which the contractor makes their claim.

According to Justice Akenhead in *Walter Lilly & Company Ltd v Mackay & Anor [2012] EWHC 1773*

> The first step in this process is to consider whether or not the settlement was a reasonable one, having regard to cases such as *Biggin v Permanite* [1951] 2 KB 314 and, more recently, *Axa Insurance UK Plc v Cunningham Lindsey United Kingdom* [2007] EWHC 2023, *Siemens Building Technologies FE Limited v Supershield Limited* [2010] BLR 145.

Having established that the settlement sum was reasonable, it is then necessary to establish what, if any, part of the sum paid to a subcontractor in settlement of its claims was attributable to a claim for delay or disruption arising out of a matter for which the employer was responsible.

Lost profit claims

The contractor can usually claim lost profit on the basis of the contract or governing law. The relation (including potential limitation) of contractual claims for profit surcharge/lost profit and statutory lost profit claims depends on the wording of contract and governing law. Contractual claims for profit surcharges (in addition

to cost) are admissible, for example, under the following FIDIC CONS/1999 Red Book Sub-Clauses:

- Sub-Clause 1.9 Delayed Drawings
- Sub-Clause 2.1 Right of Access
- Sub-Clause 4.7 Setting Out
- Sub-Clause 4.24 Fossils
- Sub-Clause 7.4 Testing
- Sub-Clause 10.3 Interference with Tests
- Sub-Clause 16.1 Suspension by Contractor
- Sub-Clause 17.4 Employer's Risks.

The contractor can often claim lost profit in cases of delay or disruption caused by the employer. The significance of the above is that certain elements of a contractor's claim for recovery of prolongation costs attract the addition for lost profit where others such as delay caused by unforeseen physical conditions do not. This can lead to contractors effectively shopping for delay events to attract the lost profit addition – particularly in 'mega' infrastructure projects. The amount of lost profit should be comparable to that in the tender, which can be proved by reference to tender pricing information. Alternatively, it is usual to state the addition for such profit within the particular conditions or appendix to tender as a percentage of cost.

Under particular governing law, lost profit is often part of a statutory compensation scheme in cases of breach of contract or law. In common law countries, it can further be based on tortious actions.

In US jurisdictions, for example, the legal requirements necessary to establish lost profit claims are generally threefold. It must be shown that:

- The lost profits were reasonably foreseeable at the formation of the contract stage.
- The defendant's actions were the proximate cause of the lost profits.
- The lost profits can be proven with reasonably certainty.

Financial costs and interest claims

Greater financial costs are encountered when there is a prolongation of performance guarantees and insurance. Such prolongation usually needs to be approved by the employer. Each respective claim is then quite easy to prove via contract addendums with the bank and insurance company.

Another typical claim relates to payment of interest. In the UK, financing charges have become a valid head of claim as a result of the decision in *F G Minter v. Welsh Health Technical Services Organisation* (1980). This case established that there are two types of financing charge. The first is the loss of interest on capital which the contractor has not been paid and is therefore not able to put into their interest-bearing bank account. The second type is the interest incurred by the contractor on overdraft charges arising from the use of the contractor's own money to finance work. Normally they would expect to use the money paid to them under the contract for that purpose.

Financing charges are a secondary cost. If a contractor's claim for primary costs fails, then it follows that their claim for financing will likely fail with it. On the other

hand, if the primary cost claim succeeds, it is possible to infer that financing charges have been incurred.

Increased cost of material, labour and equipment

Contractors often claim increases in the costs of buying materials, labour and equipment due to inflation over the period of delay. This head of claim needs to be supported by evidence providing details of the difference in cost between the price upon which the contractor's tendered rate was based and the actual cost paid as a result of the delay. Alternatively, such claims can be supported by the use of published indices. The success of such claims is highly dependent upon the governing law and local methods of dispute resolution. For details see also Sections 2.8 and 5.10.

Claim preparation costs

Construction claims are complex and sometimes great effort must be invested in putting together a precise claim which has good prospects of success. It can be said that the preparation of claims has developed into a specific discipline which is often extremely time-consuming and expensive because, almost always, this requires the participation of specialist consultants and lawyers. Contractors do have the right to recover the cost of claims preparation if it is proved that the additional payment or extension of time has been caused by the employer.

In this regard, ICC case no. 10951 (ICC, 2012) is worth a mention. In this case the tribunal accepted that claims preparation costs could include, in principle, the costs of in-house staff of the subcontractor tasked with dealing with the claim. The tribunal held that although the ICC Rules (the 1998 Rules) do not contain a definition of the 'other costs incurred' by the parties, it has become more and more accepted over the years that 'other costs' may also include the costs which a party incurred for in-house staff specifically appointed to prepare and support proceedings before an arbitration tribunal. In the case at hand, however, the evidence on record did not enable the tribunal to accept the full amount of salaries claimed.

> The arbitral tribunal is neither in a position to find out how much time the above-mentioned persons effectively dedicated to the preparation and support of the proceedings, nor to review whether the salaries claimed correspond to their employment agreements. On the other hand, the arbitral tribunal is aware that those persons in fact played a considerable role on the subcontractor's side. All in all, the arbitral tribunal finds it appropriate to cut the total amount down to 50% … In view of the total amount in dispute …, the complexity of the case and the time spent, the arbitral tribunal finds that the aforementioned amount … represents reasonable legal and other costs incurred by the subcontractor.

According to Seppälä (ICC, 2012), the tribunal's finding that a subcontractor could claim adjusted costs representing approximately 4% of the amount in dispute to be fair and reasonable. But, in order to recover its full in-house staff costs, the subcontractor must provide the appropriate evidence, which in this instance the tribunal found to be: (1) evidence of the time effectively spent by in-house staff on

the preparation and support of the arbitration; and (2) evidence of salaries claimed (such as employment agreements). Thus, this case provides support for the proposition that in order to permit the full recovery of the costs of in-house staff working on arbitration, such staff should (like lawyers in external law firms) keep time sheets and record their time on a daily basis. These should then be submitted, if necessary, to support any claim for the recovery of in-house staff costs.

10.4.2 Disruption claims

Disruption can be defined as any change in the method of performance or planned work sequence contemplated by the contractor at the time the bid was submitted that prevents the contractor from actually performing in that manner. This material alteration results in increased difficulty and cost of performance. Claims for disruption are prevalent on most major infrastructure projects. While permitted by contract, they are notoriously difficult to evidence and prove and tribunals remain sceptical of these types of claims (Cushman, 2011).

Events that cause disruption may include, for example, the employer stopping and starting the project, late design information, differing site conditions, delayed or uncoordinated instructions for variations, employer-instructed out-of-sequence work, overzealous inspections or testing, the presence of other contractors, damage caused to the works by other contractors, delayed or hindered access and late issue of or inaccurate drawings (Bunni, 2005).

Disruption claims are in themselves divided into two further types of claims. First, if the disruption caused is to a non-critical activity and the result is that the activity itself takes longer by using up the float time either before or after the date that the activity was to be performed. It will cost more because of the inefficiency in carrying out the activity but, because time is not critical, there is no delay in the time for completion and it will not entitle the contractor to an extension of time.

Second, where continuous, extensive and cumulative disruption is such that the flexibility in time allowed to the relevant activity is exceeded, then this non-critical activity becomes a critical one and further disruption ends in critical delay and prolongation of the time for completion. In such a case the contractor is entitled not only to the monetary cost of that disruption but also to an extension of time and the prolongation costs, if any, associated with such an extension (Bunni, 2005).

The impact of disruption is often a loss of efficiency in performance and increased costs. Time for performance alone may not necessarily be extended as a result of the disruption. Such loss of momentum leads to more labour and equipment hours required to do the same work (slower learning curve, overcrowding, and so on).

There are several methods for calculating loss of efficiency. According to Cushman, (2011), the following methods are typically used in the United States:

- total cost;
- modified total cost;
- measured mile;
- should cost estimates;
- industry standards and handbooks;

- time and motions studies;
- expert opinion;
- jury verdict.

Typical damages associated with disruption claims involve increased labour costs for additional employees used to perform extra work, increased costs for inefficiency caused by altered work conditions or overtime and increased equipment and material costs. It is extremely important for a contractor whose performance has been disrupted to keep accurate records of increased costs or time of performance.

There may be hidden disruption costs such as those associated with shutting down operations (demobilization) and starting up again (remobilization). The more current the records and the greater the accuracy, the higher the probability of recovery without lengthy dispute resolution (Kitt and Fletcher, 2013).

The starting point according to the SCL Protocol for any disruption analysis is to understand what work was carried out, when it was carried out and what resources were used. For this reason, record keeping is just as important for disruption analysis as it is for delay analysis.

In terms of 'after the event' analysis, the SCL Protocol recommends that, in deciding entitlement, the adjudicator, judge or arbitrator should (so far as is practicable) put him/herself in the position of the contract administrator at the time the employer risk event occurred.

The most appropriate way to establish disruption according to the SCL Protocol is to apply a technique known as the *Measured Mile*. This method compares the productivity achieved in an unaffected part of the contract with that achieved in the affected part. The comparison can be made on the man-hours expended or the units of work performed. However, care must be exercised to compare like with like. For example, it would not be correct to compare work carried out in the learning curve part of an operation with work executed after the period.

It is worth examining the SCL Protocol further because it contains one of the few coherent opinions on disruption evaluation. If it is difficult to find unaffected parts in the contract, comparison of productivity with other contracts executed by the contractor may be an acceptable alternative, provided that sufficient records from the other contracts are available to ensure that the comparison is on a like-with-like basis. Failing that, it might be acceptable to use model productivity curves and factors developed by a number of organizations from data collected on a range of projects (e.g. by the US Army Corps of Engineers, the International Labour Organization, the Mechanical Contractors' Association of America Inc, the Chartered Institute of Building, and so on). These curves provide general guidance and they should be used only if they are relevant to the working conditions and type of construction and are supported by evidence from the party seeking to prove disruption.

According to Bunni (2005), a proper evaluation of a claim for disruption requires the following prerequisites:

- Identification and an analysis of each of the operations claimed to have been disrupted. It is not sufficient to simply state that the execution of the works has been disrupted.

- The cause and the manner in which disruption has occurred should be established.
- The figures for the anticipated output, the resources planned and the time required to achieve the completion of the disrupted operations as calculated in the tender have to be shown to be achievable.
- The effects of any inefficiency on the part of the disrupted party in carrying out the works should be properly calculated and its effect included in the calculations of disruption suffered.
- The number of hours actually logged in the time sheets for the disrupted operation has to be shown to be accurate.

10.5 Claims resulting from governing law

Claims resulting from the governing law are included, for example, in FIDIC forms under claims made 'otherwise in connection with the contract' (see Sub-Clauses 2.5 and 20.1). There is no reason to prevent either the contractor or the employer from making a claim for breach of either a contractual or tortious duty, if the contract does not stipulate otherwise. If the engineer receives such a claim, they should treat it in the same way as any other claim using similar principles mentioned above and take into account the options and restrictions given by the governing law.

The governing law will significantly influence, for example, claims connected to termination, proving differing site conditions and professional liability claims aimed at designers, engineers, construction managers, and so on.

10.6 Global claims

To prove that something caused an effect can be challenging in construction disputes. As discussed in *Keating on Building Contracts*:

> Contractors often have claims dependent on a number of separate causes, each of which has contributed to delay and extra cost. In principle, the loss attributable to each cause should be separately identified and particularised but separation may be difficult.

Such complexity leads to the development of 'global claims'. A global claim is one in which the contractor seeks compensation for a group of employer risk events but does not or cannot demonstrate a direct link between the loss incurred and the individual employer risk events (SCL Protocol).

Recently, some courts have been accepting global claims or modified versions of them. This is due to the complexity of activities performed on a construction site that makes the process of individual claims, precise documenting and quantifying (where each cause has a distinctive effect and a distinctive loss) almost impossible (Haidar, 2011).

A global claim is one whereby an aggregated loss or period of time is based on a group of individual breaches or events without attempting to prove the individual impact of each breach or event. Where the claim is one for money rather than time, such claims are often referred to as *total cost claims* reflecting the fact that they often appear simply from the contractor's total cost for the project, less the amount paid to date by the employer (Choat and Peckett, 2012).

Even if the process of identifying individual causes and their effects and establishing the specific damages can be achieved, the time it can take to present individual claims is prohibitive – especially if the task could be repeated hundreds of times on very large projects. The courts are also showing reluctance to sift through and review thousands of documents just to prove liability or to decide on variation issues (Ramsey, 2013).

Critics of the global approach to claims often refer to the decision of the Privy Council in the Hong Kong case of *Wharf Properties v. Eric Cumine Associates (No. 2)*. In Australia, on the other hand, the courts have developed a more practical approach to the problems of global claims, as seen in *John Holland Construction & Engineering Pty Ltd v. Kvaerner R J Brown Pty Ltd*. This approach was accepted in England in *Bernhards Rugby Landscapes Ltd v. Stockley Park*.

One of the key precedents in this area is the UK case of *Walter Lilly v Mackay*. The facts and outcome are as follows: Facts: in 2004, Walter Lilly & Company entered into a contract with an employer for the construction of three large houses on the site of what was previously the Earls Court Telephone Exchange. A dispute arose and it was argued that Walter Lilly & Company's claim should fail on the grounds that it was a 'global' claim.

Ruling: Justice Akenhead (the head of the Technology and Construction Court) explained that such claims are usually formulated on the basis of

> numerous potential or actual causes of delay and/or disruption, a total cost on the job, a net payment from the employer and a claim for the balance between costs and payment, which is attributed without more and by inference to the causes of delay and disruption relied on.

Before *Walter Lilly*, certain cases suggested that a global claim would only be permitted where a contractor could show that it was impossible to separate individual losses caused by individual breaches. Justice Akenhead's judgment continued:

> Obviously, there is no need for the Court to go down the global or total cost route if the actual cost attributable to individual loss causing events can be readily or practicably determined … In principle, unless the contract dictates that a global cost claim is not permissible if certain hurdles are not overcome, such a claim may be permissible on the facto and subject to proof.

One of the most forceful ways in which a global claim can be undermined is to show that there are other causes for the loss claimed by the contractor for which

there is no entitlement to recover under the contract. The approach preferred by Justice Akenhead was for any established counter-examples to be deducted from the global loss, insofar as they can be quantified 'either precisely or at least by way of assessment.' Such an approach was thought by His Honour to be:

> not inconsistent with the judge's reasoning in the Merton case that 'a rolled up award can only be made in the case where the loss or expense attributable to each head of claim cannot in reality be separated', because, where the tribunal can take out of the 'rolled up award' or 'total' or 'global' loss elements for which the contractor cannot recover loss in the proceedings, it will generally be left with the loss attributable to the events which [*sic*] the contractor is entitled to recover loss.

Before this case, a defendant could rely on a number of counter-examples in an attempt to show the claim was fundamentally unsound. A claimant might now simply respond that whatever counter-examples are proved can be deducted from the global loss and the remainder will 'generally be … attributable to … events [for] which the contractor is entitled to recover loss'. If pressed too far, this approach has the potential (in practical terms) to shift part of the burden of proof to the defendant (Choat and Peckett, 2012).

In January 2013, the Court of Appeal confirmed the decision in *Walter Lilly*. In doing so it remarked that it was 'not reasonably arguable that the judge erred in his analysis of the law as to what is required in respect of a global claim'. The decision in *Walter Lilly* does not change the fact that it is still very difficult to prove a global claim. It is worth mentioning here that standard forms usually do not deal with the admissibility of global claims. *Walter Lilly* may lead some employers to write into their contracts the terms prescribing when (if at all) global claims can be made (Choat and Peckett, 2012).

A completely global claim which piles up allegations and evidence in the hope that the tribunal will be overwhelmed by the complexity and will accede to a large claim is likely to fail outright. The claim should be divided up into discrete parts. This may be a division based on particular areas of a project, particular activities or trades or particular time periods. It may also be a combination of these. This allows the case to be presented to the tribunal in a logical manner and assists the tribunal to understand the factual position more easily (Ramsey, 2013).

Such a 'global' approach to damage evaluation may be viable in common law litigation, DAB or arbitration but can be difficult in civil law litigation where judges strictly require precise evidence of damage via detailed documentation including causation and calculation of particular damages. On the other hand, it is common knowledge in civil law countries that it is sometimes difficult (or even impossible) to prove damages for breach of contract, even where there is no doubt that damages have in fact occurred. In its judgment 32 Cdo 4762/2010 dated 20 March 2010, the Supreme Court of the Czech Republic ruled that:

> If the claim to sue is legitimate in terms of its basis, the court cannot dismiss the lawsuit for the failure to satisfy the burden of proof requirements even if the burden of proof requirement is only in respect of the amount of the claim that the court considers.

The obstacle was in § 136 of the *Czech Civil Procedure Code*, which stipulates that '[if] the amount of the claim can only be determined with difficulties or cannot be determined at all, the court shall determine it at its sole discretion'. Such provisions are common in the majority of civil law countries.

A similar provision is can be found in UNIDROIT principle 7.4.3, which refers to *Certainty of Harm* and provides: '(3) Where the amount of damages cannot be established with a sufficient degree of certainty, the assessment is at the discretion of the court.'

In the daily practice of international construction projects, participants often have to deal with the issue of defining 'cost' and 'overhead' (under Sub-Clause 1.1.4.3 in the FIDIC forms 1999, First Edition) in relation to delay and disruption claims. Greater guidance on this issue would no doubt be welcomed by international construction practitioners, for example, in the *FIDIC Guidance for the Preparation of Particular Conditions* or *The FIDIC Contracts Guide* to establish international best practice in this area.

All global claims are not negatively 'global'! by Frank Thomas (France)

There is a continuous debate in the construction industry on the effectiveness and validity of global claims, which are presented during court and arbitration proceedings. On one hand, a global claim is very often associated with the claimant's incapacity to demonstrate how a group of delay events have actually affected the time for completion or claimant's working efficiency. On the other hand, a global claim may also mean something completely different such as the usage of a specific Forensic Delay Analysis (FDA) technique for proving causation between liability and damage of either party. For these reasons, the word 'global' tends to bring with it negative connotations. Global claims can be categorized into two groups:

- *The global claim as a bag claim*: Under a bag claim all the events are collected in a non-structured manner and described as having a 'global' effect without showing causality and effect on the critical path and/or resources. Under a bag claim, concurrency of events will usually be neglected or ignored and no proper FDA technique is actually used. Under a bag claim, the claimant is often relying upon the 'magic' of the effect of grouping delay events together without proving any causation between liability and damage.
- *The global claim as a net compounded effect claim*: Under a net compounded effect (NCE) claim, all the events are evaluated/quantified separately on merit and quantum and their net compounded effect is then analysed by using a specific FDA technique such as 'impacted as planned', 'time impact analysis in slices', 'collapsed as built', and so on.

The NCE claim truly and correctly analyses and quantifies the effect of all delay events in a baseline programme by taking into account their concurrency by using appropriate FDA techniques. There are different FDA techniques and the selection of one specific technique is usually dependent on contractual requirements. The FDA must prove three fundamental elements:

1. *Liability*: Parties' liability for a delay must be demonstrated under the contract terms and/or in accordance with applicable law.

2. *Causation*: The causal link between one party's delay and the delayed completion of the project must be demonstrated unambiguously and by taking into account the concurrency of delays of both parties.
3. *Damage*: The alleged damage suffered by one party due to the delay caused by the other party should be clearly established (i.e. extent of the delays and additional costs suffered by each respective party).

For example, when delays are evaluated retrospectively after project completion, it becomes almost unavoidable to apportion the delays between the parties in an objective manner. A critical path method (CPM) analysis, which includes a comparison of the 'as built' with the 'as planned' programme on a month-by-month basis, usually constitutes a credible means of apportioning parties' delays and determines their impact on the project completion date. For example, a NCE claim can be prepared by using a detailed FDA taking into account all the delays encountered on the project such as the 'time impact analysis in slices' technique. This FDA technique consists of the addition of delays in a relevant programme at the beginning of a time slice (e.g. a month) and the comparison of the impacted programme with the 'as built' programme at the end of the relevant time slice by establishing the gains and delays caused by each party and in the reiteration of such evaluation slice by slice. This FDA technique enables the delay analyst to exactly apportion delays between the parties. FDA techniques are usually found to be an acceptable means of proving causation between liability and damage during court and/or arbitration proceedings.

A global claim becomes 'positively' global when its aim is to demonstrate rationally (and not by magic) the link between causation and damage by using sound FDA techniques.

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10.7 Contractor's claim management under FIDIC forms

Under FIDIC forms, contractor claim management must be supported by proper record keeping (see Sub-Clauses 6.10, 8.3(d), 14.5, and 20.1 of the FIDIC forms). The contractor also has an 'early warning duty' (Sub-Clause 8.3), the duty to notify the claim (not later than 28 days after the contractor became aware, or should have become aware, of the event or circumstance) and the duty to submit a fully detailed claim which includes full supporting particulars (not later than 42 days after the contractor became aware, or should have become aware, of the event or circumstance). Further, there is the duty to keep a summary of claims in a progress report as per Sub-Clause 4.21 (f) and reporting in the monthly statement as per 14.3 (f). See Appendix D4 Claim Management System under FIDIC forms, in this volume.

According to FIDIC, the basic procedure for a contractor's claim is described in Sub-Clause 20.1, according to which:

> If the contractor considers himself to be entitled to any extension of the time for completion and/or any additional payment, under any Clause of these conditions or otherwise in connection with the contract, the contractor shall give notice to the engineer, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 28 days after the contractor became aware, or should have become aware, of the event or circumstance. If the contractor fails to give notice of a claim within such period of 28 days, the time for completion shall not be extended, the contractor shall not be entitled to additional payment, and the employer shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply.
>
> The contractor shall also submit any other notices which are required by the contract, and supporting particulars for the claim, all as relevant to such event or circumstance.
>
> The contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the site or at another location acceptable to the engineer. Without admitting the employer's liability, the engineer may, after receiving any notice under this Sub-Clause, monitor the record-keeping and/or instruct the contractor to keep further contemporary records. The contractor shall permit the engineer to inspect all these records, and shall (if instructed) submit copies to the engineer.

A claim quantification follows the notice of claim.

Pursuant to Sub-Clause 20.1, the following applies:

> Within 42 days after the contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the contractor and approved by the engineer, the contractor shall send to the engineer a fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect:
>
> (a) this fully detailed claim shall be considered as interim;
> (b) the contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/or amount claimed, and such further particulars as the engineer may reasonably require; and
> (c) the contractor shall send a final claim within 28 days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the contractor and approved by the engineer.

After the claim is submitted, the following procedure by the engineer is foreseen:

> Within 42 days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the engineer and approved by the contractor, the engineer shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars, but shall nevertheless give his response on the principles of the claim within such time.

The following will further apply:

> Each payment certificate shall include such amounts for any claim as have been reasonably substantiated as due under the relevant provision of the contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.

According to Sub-Clause 3.5, the engineer will decide about the contractor's claim

> to agree or determine (i) the extension (if any) of the time for completion (before or after its expiry) in accordance with Sub-Clause 8.4 [extension of time for completion], and/or (ii) the additional payment (if any) to which the contractor is entitled under the contract.

Provided on a monthly basis, the statements under 14.3 (f) shall then include as an item: 'any other additions or deductions which may have become due under the contract or otherwise, including those under Clause 20 [Claims, Disputes and Arbitration]'

In addition to the above, the progress report under Sub-Clause 4.21 (f) shall include a list of notices given under Sub-Clause 2.5 [Employer's Claims] and notices given under Sub-Clause 20.1 [Contractor's Claims].

Sub-Clauses 6.10 and 8.3 are important for the management of contemporary records. Sub-Clause 6.10 further states that

> The contractor shall submit, to the Engineer, details showing the number of each class of Contractor's Personnel and of each type of contractor's equipment on the Site. Details shall be submitted each calendar month, in a form approved by the engineer, until the contractor has completed all work which is known to be outstanding at the completion date stated in the taking-over certificate for the works.

Sub-Clause 8.3 deals with the time programme:

> The contractor shall submit a detailed time programme to the engineer within 28 days after receiving the notice under Sub-Clause 8.1 [Commencement of Works]. The *contractor* shall also submit a revised

> programme whenever the previous programme is inconsistent with actual progress or with the contractor's obligations. Each programme shall include … (d) a supporting report which includes:
>
> (i) a general description of the methods which the contractor intends to adopt, and of the major stages, in the execution of the works, and
> (ii) details showing the contractor's reasonable estimate of the number of each class of contractor's personnel and of each type of contractor's equipment, required on the site for each major stage.

In the broader sense, contractor claim management also includes protection against the employer's claims and claims related to subcontractors and others.

10.8 Employer's claim management under FIDIC forms

Under FIDIC forms, employer claim management mainly requires proper record keeping, the duty to notify in accordance with Sub-Clause 2.5 (the notice shall be given as soon as practicable after the employer became aware of the event or circumstances giving rise to the claim) and proper quantification and documentation of the claim. More generally, the employer's claim management also provides protection against contractor claims or against the claims that other construction project participants may lodge.

According to Sub-Clause 2.5:

> If the employer considers himself to be entitled to any payment under any Clause of these conditions or otherwise in connection with the Contract, and/or to any extension of the defects notification period, the employer or the Engineer shall give notice and particulars to the contractor … The notice shall be given as soon as practicable after the Employer became aware of the event or circumstances giving rise to the claim. A notice relating to any extension of the defects notification period shall be given before the expiry of such period. The particulars shall specify the Clause or other basis of the claim, and shall include substantiation of the amount and/or extension to which the employer considers himself to be entitled in connection with the contract.

Concerning the employer's claim quantification, it applies (pursuant to Sub-Clause 2.5) that the engineer must first decide about the notified employer's claim using Sub-Clause 3.5,

> to agree or determine (i) the amount (if any) which the employer is entitled to be paid by the contractor, and/or (ii) the extension (if any) of the defects notification period in accordance with Sub-Clause 11.3 [extension of defects notification period].

The following will apply after the engineer's decision:

> this amount may be included as a deduction in the contract price and payment certificates. The employer shall only be entitled to set off against or make any deduction from an amount certified in a payment certificate, or to otherwise claim against the contractor, in accordance with this Sub-Clause.

10.9 Intercultural aspects

Claim management (particularly in an international project management context) cannot exist in isolation of intercultural aspects. As the claims process is quite a strict system, it can create problems in some cultural backgrounds if the proper tactics and diplomacy are not employed. In developed countries, such formalized procedures have been used for a prolonged period of time and construction project participants are used to them. In less developed countries where claims management is a new concept, they may be problematic to implement.

For example, the contemporary Czech character is known for its attempts to avoid conflicts. Czech people prefer calm and a friendly social climate and may read a rigorous, formal advance as a personal attack. Among the Czechs, scepticism surrounds written communications, with oral communication and reporting being preferred as more reliable. This approach may be unacceptable or even dangerous in an international construction project setting.

Claim management is based on British traditions. Official correspondence is something natural for the Britons. On the contrary, they do not like talking about money, preferring to discuss it formally and in writing (Fox, 2010).

Another aspect, typical of many nations is that people consider a small delay to be normal, with no consequences and sanctions and often with problems often sorted out at the last minute. This is a very risky approach due to the fact that claim notifications are subject to certain dates (deadlines) and failure to keep them may threaten the enforceability of a relevant claim.

Cultural considerations in Southeast Asia by Salvador P. Castro, Jr. (The Philippines)

Southeast Asia is a sub-region of Asia, consisting of the countries that are members of the Association of Southeast Asian Nations (ASEAN) and East Timor. The members of the ASEAN are:

1. Brunei Darussalam
2. Cambodia
3. Indonesia
4. Laos
5. Malaysia
6. Myanmar

7. the Philippines
8. Singapore
9. Thailand
10. Vietnam.

Southeast Asia is a diverse mix of countries, people, cultures, religions, laws and politics. The ASEAN mix of countries offer a stable political, legal and business environment to a much less developed and much less certain legal, political and business environment. There are also members of ASEAN that are currently in the process of transitioning to a more democratic form of government.

The culture in ASEAN is diverse: a mixture of Chinese, Indian, Spanish, Arabic and the indigenous Malay cultures, including a number of other nationalities and ethnic groups. The Philippines, as an example, is influenced by Spanish and Western cultures derived from when the period the country was under Spanish and American rule.

Although English is the common language in the ASEAN countries, the level of speaking and understanding the English language varies among the members. According to the Department of Languages and Cultures of Southeast Asia, ASEAN is a region of enormous linguistic diversity where hundreds, or perhaps thousands of languages are spoken.

English is not the ASEAN's mother tongue, but rather is considered the language for business. While a number of countries view English as their second language, there are also several in ASEAN that are still in the process of learning and understanding English, see Table 10.1.

Table 10.1 Languages spoken in Southeast Asia

Country	Language spoken
Singapore	Malay, Mandarin, Tamil, English (national language is Malay with English as the language for business)
Brunei Darussalam	Malay (Behasa Melayu)
Cambodia	Khmer
Indonesia	Indonesian (Bahasa Indonesia)
Laos	Lao
Malaysia	Malay
Myanmar	Burmese
The Philippines	Filipino (English as language for business)
Thailand	Thai
Vietnam	Vietnamese

One of the main considerations is that countries in Southeast Asia are traditionally 'high-context cultures', while Australia, Germany, England, Canada, Switzerland and the United States are typically low-context culture countries. High-context culture uses high-context communications. Communications are indirect and the message is delivered implicitly rather than explicitly and directly (Harris and Moran, 2004).

Within the ASEAN countries:

- Relationships are always more important in business than the contract.
- 'Face saving' is regarded as one of the most important dimensions of context in business in the ASEAN countries, in order to preserve one's prestige, dignity or reputation.
- High priority on keeping harmony, preventing anyone from losing face and nurturing relationships during the life of the contract.

For example, Filipinos are somewhat emotional people and very sensitive. 'HIYA' in Filipino (meaning 'shame') is an important social force for Filipinos that applies in business, to people and society generally. People from all levels need to 'save face' at all cost. This culture of 'losing face' is also found among Thais and other members of the ASEAN. Indonesians are extremely indirect in business contexts. Therefore, it is very important to circumvent the subject before the critical issues are mentioned. Indonesians and other Malay countries in the ASEAN, in their business context try their best to avoid someone feeling 'MALU' (in Indonesian, meaning ashamed, insulted or embarrassed).

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'Claim' as perceived in the Polish civil law environment by Michał Skorupski (Poland)

It seems there is a difference in the meaning of the word 'claim' in particular cultures and legal systems. Take, for example, common law jurisdictions vs the Polish civil law jurisdiction. The Polish equivalent of 'claim' ('*roszczenie*' in Polish) has a strong, negative conotation. Let me put it into context. In England, a worker claims his holiday entitlement, his expenses from his employer and his tax return from the Treasury. It seems that claiming is a natural feature of life and the public as well as the institutions and the state itself are quite used to it. In Poland, if someone has a claim – '*ma roszczenie*' – it means that other person has done something wrong to them. It is perceived as an act of self-defence or aggression related to some failure rather than a request for a normal entitlement.

A typical person dealing with '*roszczenia*' in the construction industry in Poland will be a lawyer rather than commercial manager or a quantity surveyor. Instead of concentrating on the subject matter of the event, lawyers will normally prepare a long essay presenting the legal standpoint and exaggerating the consequences.

Typical terms of reference for the role of an engineer of a public project, e.g. issued by the Road Authority in Poland, will contain a sentence and obligation to 'predict and counteract Contractor's claims' ('*przewidywać i przeciwdziałać roszczeniom*'). The role of the FIDIC engineer is openly and blatently altered to resist and oppose claims rather than analysing them and

trying to reach agreement between the parties or making a fair determination in accordance to Sub-Clause 3.5.

Such a defence of claims often results in unfair actions, legal deliberations and looking for loopholes in documents. Engineers have become more lawyers and essayists rather than professionals duly trained and experienced to perform the role according to the contract.

However, more and more contractors are progressively demanding the engineers (companies performing this role as well as individuals) perform their duties under the contract with due diligence, i.e. take due regard of all relevant circumstances, including those circumstances which are advantageous to the contractor. It is quite typical (as a consequence) to prepare claims based purely on inadequate performance of the role of the engineer.

The negligence of the engineer is the contractual responsibility of the employer (Article 474, *Polish Civil Code*). However, the engineer may be personally liable for their actions if they exceed their proxy (Articles 103 and 104, *Polish Civil Code*). In all cases the engineer can be held responsible for the contractor's loss occurring as result of contravening the law (Articles 361, 415 and 430, *Polish Civil Code*). Reminding the engineers of their duties and potential individual responsibility has been highly recommended also. Since 2004, the employers who have an absolute monopoly on constructing the terms and conditions of the public works contracts have started to abandon the idea of using dispute adjudication boards or arbitration tribunals. In fact, the dispute is now limited only to the determination of the engineer which is subject to pressure from the employer before proceeding directly to a public court. This was meant to limit the influx of claims. Of course the actual result is the opposite with more and more cases left to the courts. The response of the contractors was to strengthen the claims policy in order to gain a better bargaining position in court.

This is a great example of lack of motivation to resolve naturally encountered problems on site with common sense. Despite the negative meaning of the word 'claim' in Polish culture, more and more claims are being sought. Courts are now flooded with these cases – many of which could have been resolved on site in due time.

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10.10 Claim management implementation

Many countries in Central and Eastern Europe (CEE) went through significant changes after 1990. Democracy brought changes in economic systems and with these came new laws. These changes created a lot of opportunities and threats that had not been encountered before. After 1990, the construction market increased both within building construction and civil engineering. Market share, turnover and profit of construction companies had been steadily increasing without major disruption. Then came the economic recession, reduced public spending on

infrastructure projects and new competitors. This caused upheavals in the CEE construction markets.

In an economic recession, construction companies face rapid change in the external environment. Their strategies must be changed respectively because of budget restrictions. Further, new and very competitive global markets are being established. Competing contractors often bid without profit, risk and overhead surcharges. Sometimes their bid prices are so low that they make a loss on the project.

It is quite common that large, public construction projects are not properly prepared by the employer. One of the main reasons is that the employer is pushed by the lenders or sponsors to meet unrealistic deadlines. In such a project environment, claim management is crucial. In public procurement projects, the governing laws may affect the variation and claim procedures and cause many difficulties to the participants of construction projects. Whether a contractor is able to claim in compliance with the contract may become a question of survival for them.

Recent experience (1990–2013) from CEE countries (for example, Poland, Romania and the Czech Republic) shows that local construction practitioners and employers have not been prepared for the current environment which includes tough international competition and new global rules (such as FIDIC contracts). In many countries, formal contractual procedures have not been used even if they were anticipated by the parties as being contractually binding. A 'peaceful and financially buoyant situation' on some markets has created complacency and caused formal procedures to be ignored in some cases. Parties were always able to find agreements because of sufficient budget contingencies.

An economic recession is a cause of stress. Budget contingencies are not sufficient and the authorities are required to strictly follow public procurement law. This pushes the contractors to adhere to contracts in the same strict way as with claim management procedures. After the need to claim formally is discovered, construction companies are in haste to implement their respective internal systems for claim management. Claim management is quite a formal process that is not natural for people in many countries. People, for example, in CEE countries are often heard saying 'Why should I write a notice to a person sitting in an office next to me? I can simply tell them that something is wrong.' Every construction practitioner in the western world knows this premise is completely wrong. The 'paperwork' is an important part of project management and claims have to be solved in a formal way. This common knowledge is based on experience and tradition spanning decades. In many countries, the participants of construction projects must develop their own traditions in the new global construction environment.

Claims in a tunnel construction in the Republic of Serbia by Radim Wrana (the Czech Republic)

A tunnel construction in the Republic of Serbia consists of two double-lane tubes of speedway type. A Czech company came out as the tender winner. The conditions of contract are the

FIDIC CONS/1999 Red Book. A state-controlled company is the employer. The role of the engineer is provided by a Joint Venture of companies from Italy, France and Spain. The European Investment Bank acts as a Funding Agency.

It became obvious in the early phases of realization that cooperation with the contract administrator (engineer) would be very difficult. Despite official requests by the contractor, neither the land underneath the access route nor any exact location where the excavated material could be disposed of has been provided for the contractor. Moreover, the foundation pit for the cut-and-cover section was found to cross the boundary and extend outside of the expropriated land. The contractor has shown their willingness to resolve these serious problems by renting the neighbouring land from the local owners and has succeeded in these efforts. However, no financial compensation for the relevant claim has yet been received from the employer.

Different ground conditions from those foreseen in the tender design have been encountered at the start of excavations. The contractor had insistently notified these findings and proposed counter-measures. The engineer ignored these, responding only when fissures appeared by giving instructions on how to secure the affected slopes. The work techniques used did not allow the already naked slopes to be treated and backfills and ramping therefore had to be used. The contractor further required reworking of the design to reflect the new geology and define the structural analysis of the slopes for their stability. For three months the employer's representatives have been promising this reworked design. With nothing coming, the contractor had to suspend the works in the cut-and-cover section of the tunnel in response to warnings by its geologists.

A month after this suspension, the employer provided a new design, but its engineering quality was appalling. Despite this, the contractor decided to resume work, following the new documentation. Currently, additional re-securing of the slopes is underway using fork trucks and climbers. These measures will cost much more than originally estimated.

Collaboration with the engineer's representatives was troublesome from the very beginning of the project. The engineer was ignoring written requests and was otherwise impossible to reach – even for discussion. Contacting the employer's designer was also difficult and, sometimes, impossible. According to the latest information, the designer believes their design to be without error and it is therefore unwilling to make any design amendments or extensions to them. The conduct of the engineer was very arrogant – stubbornly refusing all the contractor's suggestions to modify the design documents. In general, the basic tender design is of a very low standard.

Disrespecting the guidelines officially issued, the engineer still has not prepared a single variation. Concerning the forms for variation orders, the contractor should use when putting forward variations, the engineer handed them over one year after project commencement.

Another reason behind the mismanagement of the project was the lack of experience with this type of cooperation with the contract administrator (i.e. the engineer) as well as tri-lingual communications (contract and official communication in English), implying a significant hindrance for most of those involved in construction. Currently, a 'paper war' is raging between the contractor and the engineer. An official letter must be sent in response to every request and then one has to wait for a reply. Mutual trust and cooperation became weaker and project fluency became paralysed.

All these aspects are likely to result in huge financial losses for the contractor as well as enormous frustration for all the members of staff involved in the realization and administration of this project.

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11 Construction Dispute Boards

11.1 Construction disputes

Construction projects are naturally prone to disputes. Contracting parties usually allocate risk to the party best able to control it. However, there is sometimes uncertainty about who is to bear a particular risk and to what extent. The reason may lie in a poorly drafted contract or ignorance of it. Sometimes the risks are allocated inefficiently in the contract. Other factors may include a lack of experience or to gain a short-term advantage. In other cases, the parties are not willing to bear the consequences of the risks allocated to them. These and many other situations often give rise to disputes. Settlement of disputes in construction requires speed, an informal approach and expertise. This is why every good contract includes a dispute resolution system.

Construction dispute in sheet metal galvanizing line project by Patrick Kain (South Africa)

The choice of an appropriate delivery method, including the form of contract, design specifications and good contract administration, is essential for any project. It is also essential that employers rely on professional advice when implementing their projects. Inappropriate documentation, contract selection and contract administration lead to project disasters.

Project background

The construction of a new sheet metal galvanizing line was awarded after direct negotiation by the developer. The employer discounted tenders on the basis of time considerations. The designer was excluded from the negotiations, which were conducted directly by the employer who had no experience in construction and contract administration.

During the negotiations, the contractor offered a significant reduction in price. The negotiations did not deal with technical issues. They only dealt with price and time. The final decision was made purely on the basis of price.

International Construction Contract Law, First Edition. Lukas Klee.
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Project complexity

The project included an excavation to 6.0 metres. This was attempted by the selected contractor on the basis of a geotechnical investigation which only extended to 4.5 metres. Despite the obvious shortfall in the geotechnical investigation, the contractor did not question the investigation and proceeded on the basis of what was provided and even attempted the excavation without shoring up the sides against collapse. The excavation collapsed at a depth of 3.0 metres. In an attempt to mitigate the situation, the employer engaged a specialist contractor to install sheet piling so that there was no further collapse of the excavation. However, this led to a dispute over who should pay the cost involved in engaging the specialist.

The designer chose to manage the project alone without the benefit of a consulting engineer and, except for the geotechnical investigation, there was a marked absence of technical expertise on deep excavations.

Form of contract

The architect based the contract on a rather basic local form of contract that is only suitable for simple house construction. There was no requirement for the contractor to provide computations for shoring or approval of temporary works.

The Contractor

The fact that the employer engaged the specialist contractor without first agreeing to the costs with the main contractor and without clarifying who should pay the costs opened the door for a major dispute.

The contractor claimed that since the employer engaged the specialist contractor, the cost should be borne by the employer. The employer claimed that the failure was attributable to the contractor's method of operation and therefore the contractor should bear the specialist contractor's costs.

Arbitration

The records of events were very sketchy. This made it difficult to understand the sequence of events that led up to the eventual impasse and arbitration. Although both parties produced long submissions to the arbitration, they were largely unsupported by evidence and contradicted one another. This made it an almost impossible task for the arbitrator.

Outcome

The final decision at arbitration was that the employer was responsible for the cost of the specialist contractor. The dispute further highlights a number of contractual errors that developers and consultants must be wary of:

- The form of contract is central to the success of any project and it is incumbent on construction professionals to use a form of contract that is fit for purpose and which has been tried and tested on similar projects.

- An employer should engage professionals in construction as the employer does not have the technical capability and qualifications to undertake the design and supervision of the works themselves and, therefore, should be prepared to seek advice on all contractual issues.
- Construction professionals must understand the limitations of their competence and seek specialist expertise where such expertise is required.

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11.2 Dispute boards

Every construction project is unique and perhaps this is why there is a general absence of 'corporate memory' in the construction industry (Chern, 2010). Regrettably, similar types of disputes arise on many construction projects and it is naïve to think we can eradicate disputes by clever contract drafting alone. What parties want is a dispute review device that is considered fair, economic and causes the least disruption to the due performance of the contract. The concept of dispute boards originated in the USA, where they have been in use for over 30 years. Their earliest reported use was in the Boundary Dam project in Washington in the 1960s. Following successful use of dispute boards on large projects, implementation of Dispute Adjudication Boards by the World Bank and FIDIC in their guides and sample forms were the further key aspects of their expansion (Chern, 2010).

A dispute board is a body set up to resolve disputes (prior to arbitration or litigation) that have arisen within a construction project. In general, there are two kinds of dispute boards: (1) the Dispute Resolution Board (which makes recommendations); and (2) the Dispute Adjudication Board (which makes resolutions).

In practice, there are not many alternatives to dispute boards. Courts often lack expertise with the exception of countries where specialized courts are established, such as in the UK or Germany. Some countries, for example, the Netherlands, have arbitration systems with tribunals that specializse in construction disputes (Lloyd, 2009). Furthermore, both litigation and arbitration are costly and time-consuming.

The arbitration process has become increasingly inefficient; however, construction disputes still represent a large share of the arbitration market. According to the ICC, construction and engineering disputes accounted for almost 17% of the total caseload in 2010. In 2011, the Chartered Institute of Arbitrators held a conference in London entitled 'Costs in International Arbitration'. It found that the typical amount spent by a party going through the arbitration process from pre-commencement to post-hearing (excluding enforcement) was in the region of £1.5m, where the median claim was just under £10m. In 25% of the cases of between £10m to £50m, the costs exceeded £5m. In over 50% of the cases where the dispute exceeded £100m, costs exceeded £5m. Nearly 75% of costs were for external legal representation.

(Chern, 2010) stated in an article on the role of dispute boards in construction that:

> The statistics show that if there is an operational Dispute Board in existence on a project, close to 99% of all disputes referred to it will be successfully resolved within less than 90 days and at a cost of about 2% of the amount of the dispute.

In Poland, for example, construction disputes in large transport infrastructure construction projects are dealt with by the High Court in Warsaw (XXV Civil Division) because the General Directorate of National Roads and Motorways (the GDDKiA) has its registered office in the Court's district. Because of the large number of disputes in Poland in recent years, a natural process of specialization of the Court's judges has followed.

Judges themselves admit that alternative dispute resolution (ADR) is a better model for hearing construction disputes. However, it is the employer who selects the method of dispute resolution and it is common for public authorities in the CEE (such as GDDKiA in Poland) to consistently delete DAB and arbitration clauses from the FIDIC forms in favour of domestic litigation.

11.2.1 Dispute avoidance

The construction industry has a reputation for disputes and conflict. (Chern, 2010) gives evidence from Australia where 50% of all legal costs associated with construction is expended in connection with disputes. In almost 10% of projects, between 8% and 10% of the total project cost was legal cost. Disputes are naturally connected to construction projects because of the amount of risk involved. Disputes are not completely avoidable but the participants of construction projects should do as much as possible to eliminate them. The situation is aggravated by the increased use of joint ventures both in consulting and in contracting. Such organizations are less autonomous and perhaps less able to negotiate settlements of their contractual problems. Dispute avoidance is, however, possible in the preparation phase via an appropriate procurement plan including the choice of delivery method, consultants and designers. Other key aspects of dispute avoidance are: (1) the ability to procure the work by an experienced contractor for a realistic bid price; (2) efficient risk allocation; and (3) how time, variation and claim management procedures are established and how disputes are resolved. Simply naming a dispute board in a project contract can be one of the strongest tools to avoid the dispute.

Project dispute avoidance by Christopher J. Mather (the USA)

I have been an advocate for over 25 years for the early negotiation of project disputes when they are first identified. This concept has not been actively endorsed, nor acted upon by all parties involved in the construction industry, nor readily accepted, until the past decade when parties began to realize that to arbitrate or litigate a dispute was not only a slow and cumbersome

process, but also an expensive process, which, ultimately, did not necessarily reflect the merits of the case itself.

Many parties involved in the dispute process have walked away dissatisfied, feeling that only the lawyers and consultants involved in the dispute process are the winners. Additionally, many parties involved in disputes have concluded that the current process distracts its key personnel from their core tasks for which they were hired, namely, to complete the project on time and within budget.

In a webinar presentation I presented on the topic 'Alternate Dispute Resolution: Taking Control of Your Disputes to Save Time and Money', over 80% of the respondents polled identified they preferred private (In-House) negotiations or a Mediation forum as the two most effective ways to expeditiously settle their disputes, instead of going to litigation or arbitration. These US participants were clearly signaling their dissatisfaction at the litigation and arbitration processes currently available to them as other options they could elect to use to settle their disputes.

Factors that impact the project's planned and financial success

In a recent survey by Marc Howell of Paradigm Strategic Partners, Inc., dysfunctional project execution problems and issues were attributed to the following causes:

1. Some 9% indicated enforcement of government regulations as a contributing factor.
2. Some 10% indicated an over-zealous owner (employer) contract, Statement of Work (SOW), along with demanding terms and conditions with unrealistic 'risk/reward' consideration as major contributing factors.
3. Some 13% indicated GCs and Subcontractors deliberately 'Low Bid' work which leads to financial weakness.
4. Some 16% indicated a lack of trust, integrity, honesty and lack of responsibility as contributing factors.
5. Some 21% of construction industry participants noted that there is an inadequate supply of trained, qualified and experienced personnel.
6. Some 31% of the current project execution weaknesses noted by Industry Professionals were attributed to a lack of adequate integration and coordination between all parties and, specifically, a lack of teamwork.

What events cause construction claims and disputes?

To mitigate disputes and claims on a project you must learn to objectively investigate the 'causation' (perform a root cause analysis) of the matter at hand. Once you have identified the issue and understand the causative events, you can take steps to mitigate possible future problems that may arise on the balance of the contract work to be performed.

Some characteristics and practices of parties involved in the construction process have elicited the following traits:

- Owner (employer)-caused problems:
  - Owner (employer) provided inadequate bid information.
  - Owner (employer) did not allow adequate time for bid/proposal preparation.
  - Restrictive specifications.

  - Owner (employer) changes to plans and specifications during construction.
  - Owner (employer) understated design completion at time of contract negotiations.
- Contractor-caused problems:
  - Contractor fails to perform an adequate pre-bid site investigation.
  - Contractor submits an unbalanced bid; bid below costs.
  - Contractor's bid incorporates poor resource planning.
  - Contractor utilizes and applies improper 'Means & Methods'.
  - Contractor's philosophy is to 'make it up on change orders'.
- Contract document issues:
  - Contractor developed an unrealistic 'as-planned' schedule baseline.
  - Mandatory advance notice of changes/disputes/claims.
  - Conflicting 'changed conditions' clauses.
  - Engineer's Final Decision.
- Contract/commercial administration issues:
  - Contractor fails to follow contract/commercial procedures.
  - Poor coordination of Owner (employer)'s responsibilities with contractor.
  - Contract Administrator's style and attitude.
  - Poor documentation of field performance records (e.g. daily reports)
  - Poor or inadequate document control procedures.
- Themes associated with 'early' problem (dispute) resolution:
  - Encourage early on-site mitigation and settlement of disputes.
  - Delegate settlement authority to field supervisors (but stipulate their level of authority).
  - Have an effective POC in place between the home office and the site.
  - Identify and delegate an authorized company executive, who is specifically tasked as the company's representative on the project to resolve disputes if unresolved on a timely basis at the project level.
  - Communicate at all times with the party that has either a dispute with you, or you with them. The better each party understands the other side's position, the higher the likelihood and achievement of an early settlement via negotiation.

Does the 'Make-Up' of a mediation or arbitration panel matter?

I am a strong believer that the make-up of a mediation or arbitration panel is essential in whether or not the disputed matter is expeditiously implemented and resolved cost effectively.

In the USA, when looking at the make-up of Arbitration panel members available, there are about two attorneys to every industry professional available to be selected to sit on an arbitration panel that specializes specifically on construction dispute matters. However, when actually looking at who is selected as the arbitrator by the parties' attorneys, lawyers are primarily selected to act as the arbitrator(s) in the majority of cases; despite sometimes complex technical issues being at the core of the disputes being arbitrated.

If more industry professionals were selected by the parties' attorneys as arbitrators instead of attorneys, disputes would be more quickly resolved and it would be more economical for the disputing parties to achieve a final resolution to their disputes. In large, complex cases where there are three arbitration panel members, I would also advocate the inclusion of an experienced

Construction Attorney to ensure that the legal interests of both parties are protected in a dispute of such magnitude.

This process can be addressed by the contracting parties stipulating that an industry professional is to be the preferred dispute resolution provider when they draft this section of the contract with the American Arbitration Association's 'Clause Builder' tool that assists you to incorporate such a provision when delineating this as part of the contract's stated dispute resolution process (see below).

When looking at the make-up of mediation panel members available, there are about three attorneys to every industry professional available to be selected to sit on an mediation panel that specializes specifically in construction dispute matters. However, when looking at who is selected as the mediator by the parties' attorneys, lawyers are again primarily selected to act as the mediator despite sometimes complex technical issues being at the core of the disputes.

Introduction of 'Clause Builder' by AAA to mitigate disputes

Last year, the American Arbitration Association (AAA) introduced to interested parties a software tool that it named 'Clause Builder'. It developed this tool, which is available on its website at www.clausebuilder.org. The AAA notes on its website:

> The American Arbitration Association's® ClauseBuilder tool is designed to assist individuals and organizations in developing clear and effec tive arbitration and mediation agreements.
>
> An effective dispute resolution process starts with a well-constructed dispute resolution clause.
>
> At this time, the Clause Builder is limited to providing assistance with commercial and construction arbitration and mediation clauses. If you would like to speak with someone at the AAA regarding an arbitration or mediation clause in an employment, international or other type of contract, please call (800) 778-7879 or email them at *www.clausebuilder@adr.org*.

On its web site, the AAA asks 'Why include an ADR (Alternate Dispute Resolution) clause?' It responds with the following points:

ADR allows parties the ability to design their own dispute resolution process, and provides them with the flexibility to customize the process to their particular circumstances.

The most frequently cited advantages of arbitration are:

- The speed with which disputes are resolved as compared to court litigation.
- Cost savings.
- Input and control in selecting an arbitrator with a background and expertise relevant to the dispute.
- Informal procedures.

Under the AAA's Rules, the procedure is relatively simple:

- Courtroom rules of evidence are not strictly applicable.
- There is no requirement for transcripts of the proceedings or for written opinions of the arbitrators.

Though there may be no formal discovery, the AAA's various commercial rules allow the arbitrator to require the production of relevant information and documents. The AAA's rules are also flexible and may be varied by mutual agreement of the parties. Finally, arbitration awards are final and binding and are enforceable in court. Court intervention in the arbitration process is very limited by state and federal laws, and enforcement is facilitated by those same laws.

It allows the user to propose ground rules to be incorporated into its contract based upon the interests and components that the two prime contracting parties (Owner (employer) and Contractor) wish to incorporate into the proposed contract language to be executed by the parties. This approach allows both parties to attempt to reduce their commercial and contractual risks before ever executing the contract. The lack of these risk-averse steps that could be applied to EPC contracts might explain and account for why approximately 25% of this type of contract is completed without dispute because they invariably come in late and over budget and the risk balance is disproportionate to one party's interests.

There has been much interest expressed in how to apply the 'Clause Builder' tool during the contract negotiation phase of each project prior to contract execution. This tool: (1) allows you to create a customized ADR clause; (2) provides a simple self-guided process; and (3) allows you to preview, save, review and edit your proposed ADR clause for Mediation and Arbitration. Those who have reviewed this tool have expressed a lot of excitement as to what can be achieved by the parties if used.

Other dispute avoidance 'means & methods' that could be applied

As a result of using available prior contract language, as well as the AAA's 'Clause Builder' tool, contract language can be developed by an Owner (employer), to reflect an approach that mitigates its downstream risks. It can also incorporate and mitigate risks that the parties want to cover and incorporate into the Dispute Resolution section of their contract before the contract is executed by the parties.

One way to mitigate project disputes as they develop is to incorporate a 'Tiered-Approach' language in one's proposed contract to mitigate contract disputes at project completion. This language, when incorporated into the contract, mandates the parties' attempt to resolve their disputes as the project proceeds following steps that are clearly delineated in the dispute resolution section of the contract. Although this process may require one additional Commercial/Contract Manager be incorporated onto the on-site project team, that additional cost to both parties is significantly less than that expended by them at the project's completion if the dispute is not resolved. Attorneys play a crucial role during this stage.

Clients should be encouraged to include and involve their attorneys during the early phases of a dispute, and to be involved on an ongoing transactional basis, in conjunction with the parties trying to settle the project dispute when it arises. They could then be used to easily incorporate their legal expertise and personal knowledge of the dispute in question and help their clients to develop a contract addendum that incorporates time, additional compensation and risk mitigation factors up to the date of the proposed addendum (variation/change order). This is the role I had my company's attorneys fulfill when the tiered-approach process was incorporated into a project contract that was executed.

An example of 'Tiered-Approach' language that could be used is as follows:

Sample 'Tiered-Approach' language

16.5. Disputes. If there is a dispute between the Parties about a request for a Change by either party under this Article 16, such dispute shall be resolved in accordance with Article 34. Notwithstanding any provision of this Article 16 to the contrary, the Parties will execute a Change Order to reflect the resolution of such dispute.
34. Disputes
34.1. Negotiations. Any disputes arising pursuant to this Contract that cannot be resolved between the Project Owner (employer)'s Representative and the Contractors Project Manager within fourteen (14) calendar days or, in the case of Payment disputes, three (3) calendar days after receipt by each of Notice of such dispute (specifically referencing this Section 34.1) shall be referred, by Notice signed by the Owner (employer)'s Project Representative and the Contractor's Project Manager, to the Executive level officers of each entity comprising Owner (employer) and Contractor as their designated representatives (which shall not be the Owner (employer)'s Project Representative nor the Contractor's Project Manager) for resolution. If the parties fail to reach an agreement within a reasonable period of time, not exceeding thirty (30) calendar days or, in the case of payment disputes, ten (10) calendar days after such referral, then the Owner (employer) or the Contractor, may institute proceedings as set forth in Section 34.2.
34.2. Dispute Resolution. If each entity comprising Owner (employer) and Contractor, negotiating in good faith, fais to reach an agreement within the period of time set forth above in Section 34.1, then Owner (employer) and Contractor agree that any and all disputes arising from, relating to or in connection with this Contract, tort or otherwise shall be submitted to the jurisdiction of the federal or state courts located in _____, PA, to the exclusion of any and all other courts, forums, venues, and the Parties waive any and all rights to contest the exclusivity of such forum, including any rights based upon the doctrine of forum non conveniens. The court shall award to the substantially prevailing Party all of its costs, expenses, attorneys' fees, filing fees and court costs.
34.3. Work to Continue. Unless otherwise agreed in writing, the Contractor shall diligently carry on the Work and shall not interfere with, restrict or discourage the prompt completion of any portion of the Work, the correction of any Defects or the provision of any warranty service during the pendency of any dispute or arbitration proceedings.

In conclusion

If the major parties to a contract are willing to be collaborative and incorporate some of the suggestions discussed in this vignette, and are willing to share the project risk between the parties from the project's inception, then fewer disputes will arise.

When disputes do arise, if the following dispute resolution procedures are followed, then the dispute should be able to be resolved in a relatively short time frame (90–120 days after the disputed issue has first been identified). By following some or all of the suggested dispute resolution procedures now incorporated in the executed contract, all parties should be able to complete many more projects on time and within budget.

Lastly, if there are project disputes at project completion, they will have been significantly reduced in number at the time of project completion by following the dispute avoidance steps that have been applied throughout the project's execution. This will save all parties a lot of time at the completion of their projects when trying to settle any outstanding disputes. It will also save them a lot of money.

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11.2.2 Dispute boards: Advantages and disadvantages

Due to the enormous volume of correspondence and occasional 'friction' between participants, it is usual to see minor disputes accompany large construction projects on a daily basis. A certain, intermediate dispute resolution level is, therefore, widely appreciated. It can make people (such as the top management of the interested parties) sit together at a joint table to try to find a compromise approach and thus avoid costly arbitration or litigation proceedings. At these meetings, opinions can get vented, tensions released and personal antagonisms extinguished in the presence of impartial, well-informed experts. Experienced pundits provide the parties with a solution that will likely result in a required compromise. Active on these boards are experts who need not be lawyers (or if lawyers, lawyers with extensive practical backgrounds in the field of construction projects), which is why they are spoken of as being 'user-friendly'. The boards can also be made up of suitable combinations of personalities with varied experience and specializations.

A dispute board becomes part of the project administration and can thereby influence (during the contract period), the performance of contracting parties. It has 'real-time' value. Many disputes concern 'non-absolute' matters and, in such cases, the dispute board can devise solutions which avoid 'win-lose' situations while keeping within contractual limitations. Working relationships are less affected and site-level partnering can continue (Chern, 2010).

The use of dispute boards is the best method of dispute avoidance because it leads the participants to find agreement. For example, the Ertan Hydroelectric Dam in China, valued at US$2 billion, had 40 disputes referred to its dispute board for decision, with no decision of this board continuing on to arbitration or litigation. The Hong Kong International Airport, valued at US$15 billion, had six disputes referred to its dispute board and, of those, only one went on to arbitration (in which case the board's decision was upheld). The Katse Dam in South Africa, valued at US$2.5 billion, had 12 disputes referred to its dispute board. Again, only one decision went on to arbitration and was also upheld.

One disadvantage of these boards is that they tend not pay off in terms of cost in smaller projects (Chern, 2010).

11.2.3 Dispute Adjudication Board (DAB)

The DAB – i.e. one or three adjudicators selected by the parties – must decide in compliance with the dispute resolution process described in the contract (see the procedure under FIDIC forms below). Alongside this contractual adjudication, there is also statutory adjudication available in some countries (see the procedure under UK and Australian statutory adjudication below).

In civil law jurisdictions, decisions handed down by DABs are persuasive in nature only and are usually not binding or enforceable. In common law jurisdictions, on the other hand, the decision is often final and binding if the parties do not appeal it within the contractually agreed period of time.

If the contracting parties want to make a DAB's decision enforceable, they can modify the DAB's status to ad hoc arbitration. The arbitration clause for an institutional arbitration court (or for an additional ad hoc arbitration) may be re-worded so that this arbitration court (or the arbitrator or the arbitrators ad hoc) would become the authority to examine the DAB's award or resolution, should one of the contracting parties challenge the award or resolution via a lawsuit.

11.2.4 Dispute Resolution Board (DRB)

As with DAB, the DRB usually consists of three reviewers who must be impartial, experienced and respected. The employer and the contractor select one member each. The chosen member must be approved by the other party. The two appointed DRB members then choose the third member who, in turn, also needs to be approved by both parties. All members select a chair of the DRB who, again, is subject to the parties' approval. Organization and set-up of the DRB takes place before the commencement of the construction project.

The DRB familiarizes itself with the contractual documents, with the project procedures, with the participants themselves and closely follows the progress of the works. The members of the DRB conduct site visits periodically.

The system aims to resolve differences early on at the job level. Where formal disputes cannot be avoided, the DRB holds a hearing and issues a written recommendation. While not binding upon the parties, recommendations are, in practice, usually accepted by the parties to the dispute. By doing so, they help themselves and maintain the credibility, reputation and expertise of the DRB and its members. The contract may also provide that DRB recommendations be admissible in any potential future litigation or arbitration (DRBF, 2013).

The use of dispute boards in the Middle East and North Africa by Andy Hewitt (United Arab Emirates)

Dispute boards have been requirements of the FIDIC forms of construction contract since 1999, but the Middle East and North Africa region seldom adopt their use. I believe that this

is due to a lack of understanding of the significant advantages of such boards and the added value that they bring to construction projects. In other parts of the world it has been proven over many years that dispute boards do the following:

- prevent disputes;
- reduce project costs;
- help to promote goodwill between the parties;
- ensure that contention is minimized;
- ensure that contentious matters are settled in a timely manner as the project proceeds.

Dispute boards have met with such success that institutions such as the International Chamber of Commerce, the Institution of Civil Engineers and FIDIC recommend their use and they have become mandatory on projects funded by many development banks.

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11.3 Contractual adjudication: The use of DAB in FIDIC forms

Dispute boards first appeared in FIDIC forms in 1995 at Clause 20 and are now a common part of most FIDIC forms and many other contracts. FIDIC forms currently 'presume' three levels of dispute resolution which can be thought of as kind of dispute resolution 'hierarchy'. Level one is the engineer themselves deciding about a claim (which is more an act of dispute avoidance rather than a dispute) and level two is adjudication through a DAB. Following an unsuccessful, obligatory attempt to achieve an amicable settlement, a dispute can end up at an arbitration senate (level three).

An older version of the FIDIC Red Book (1957) dealt with dispute resolution in two phases. Dispute resolution was up to the engineer and their decision was deemed final and binding in relation to the employer and the contractor. Within 90 days, either of the parties could question the decision and file an arbitration suit. Barring minor modifications in arbitration clauses in the Red Book versions of 1969 (2nd Edition) and 1977 (3rd Edition), this dispute resolution concept has been retained. The above two-phase concept remained even in the Red Book of 1987 (1988), but dispute resolution had, in the meantime, undergone substantial change. For example, a formal obligation had been formulated to refer any dispute to Clause 67 to make it clear that a dispute had officially commenced. Another formal innovation was that the period of time within which the engineer's decision could be questioned was reduced to 84 days. A third fundamental change was the

incorporation of amicable settlements as a compulsory item at Sub-Clause 67.2 with its wording as follows:

> Where the notice of intention to commence arbitration as to a dispute has been given in accordance with Sub-Clause 67.1, the parties shall attempt to settle such dispute amicably before the commencement of arbitration. Provided that, unless the parties otherwise agreed, arbitration may be commenced on or after the fifty-sixth day after the day on which notice of intention to commence arbitration of such dispute was given, even if no attempt at amicable settlement thereof has been made.

Therefore, a period of 56 days was newly established within which arbitration could be commenced regardless of any attempt to settle the dispute amicably. These changes, however, were not applied uniformly or in a systematic way across all FIDIC forms.

It was mentioned that FIDIC forms (in the latest 1999 Edition) established three levels of dispute resolution, i.e. the engineer (contract administrator), a DAB, and arbitration. The engineer will often decide (after notification and quantification) about a claim submitted by one of the contracting parties. Prior to this decision, the engineer is obliged to help the parties come to an agreement. This is, in fact, a form of mediation. The engineer's decision (as per Sub-Clause 3.5) must be given within 42 days after the engineer has received a claim quantification. If not satisfied with the engineer's decision, a party may forward the dispute to a DAB under Sub-Clause 20.4. The DAB must hand down its award within 84 days.

It must be stressed that a decision about a particular claim made by the engineer is not by itself a dispute. It is the contractual method by which the participants deal with claims. However, the situation is often perceived as a dispute when, in reality, it is in fact a tool for dispute avoidance.

Moreover, FIDIC DBO now contains (a new) Sub-Clause 20.5 that points out the potential mediation function of DABs stating:

> If at any time the parties so agree, they may jointly refer a matter to the DAB in writing with a request to provide assistance and/or informally discuss and attempt to resolve any disagreement that may have arisen between the parties during the performance of the contract. Such informal assistance may take place during any meeting, Site visit or otherwise. However, unless the parties agree otherwise, both parties must be present at such discussions. The parties are not bound to act upon any advice given during such informal meetings, and the DAB shall not be bound in any future Dispute resolution process and decision by any views given during the informal assistance process, whether provided orally or in writing.

At this point it should be mentioned that a hazard may appear where the contract describes the obligatory dispute resolution instruments. Take, for example, the case of *The Channel Tunnel Group v Balfour Beatty* (1992) 56 BLR 1 Court of Appeal in

which the court did not grant leave for arbitration to commence because 'time for arbitration had not yet come' due to the fact that the dispute had not been resolved in compliance with Sub-Clause 67 (1) (FIDIC Red Book, 4th Edition, 1987). This was confirmed in the same case on appeal in 1993 (*BLR 22 House of Lords*) when Lord Mustill ruled:

> Those who stipulated a dispute resolution method by their mutual agreement must give significant reasons why not to use this method … if they had undertaken to submit their complaints to experts or, if necessary, to arbitrators, ought to take the steps like this. The fact that the plaintiffs now regard the method they selected as too slow to follow their intention is, in my opinion, groundless.

In the ICC case no. 12048 (2003) (ICC, 2012) the tribunal considered whether it had jurisdiction over counterclaims of the employer which had not previously been submitted to the engineer under Sub-Clause Sub 67. The tribunal concluded that it did not. In later commentary, the ICC (2012) affirmed this as being correct explaining that under Sub-Clause 67 of the Red Book (4th Edition) an arbitral tribunal only has jurisdiction over disputes resulting from claims that had previously been submitted to the engineer for a decision under that clause. The same is true of Clause 20 of the 1999 FIDIC books (which corresponds to Clause 67 of the Red Book, 4th Edition) except that the DAB has replaced the engineer as the decision-maker. In this case the tribunal also confirmed that the engineer's decisions become final and binding upon the parties if they are not contested within the appeal period stipulated in the contract.

Under FIDIC forms in the third instance (i.e. arbitration), an obligatory attempt to settle a dispute amicably must be included as a rule. This applies to cases where there is a dissatisfaction with the DAB award and must be made within 28 days as per Sub-Clause 20.4. Amicable settlement is discussed in Clause 20.5. A particular form is not stipulated, but an expert examination or mediation will frequently be used. Arbitration Clause 20.6 requires arbitration to take place before the Court of Arbitration at the International Chamber of Commerce in Paris.

11.3.1 FIDIC policy statements to ADR

According to FIDIC, the adversarial model (involving litigation or arbitration), has serious limitations and drawbacks in the area of construction disputes resolution. The issues involved are usually very complex and hard attitudes of the parties involved in adversarial proceedings seldom lead to quick, effective and inexpensive resolutions. As FIDIC has noted:

> [Such a system] delays the execution of remedial measures, increases legal costs, creates adversaries and thus wastes resources unnecessarily. It also saps the energies of the parties in dispute, diminishing their ability to function effectively in the future. Both outcomes are detrimental to the parties, in particular, and to society, in general.

ADR models, on the other hand (such as negotiation, DRB, mini-trials, adjudications, conciliation or mediation), are consensual as opposed to adversarial. While these consensual methods may not, unlike litigation or arbitration, lead to binding and final decisions, their outcome in the form of settlement agreements may be more compelling and more certain and, in any event, enforceable by courts in cases of default. For these reasons, FIDIC has asked its Member Associations to support ADR procedures.

11.3.2 Independence and impartiality

The independence of adjudication can be affected by the level of funding and remuneration received by its members. Another important aspect supported by FIDIC is the establishment of a national list of independent, key experts. One of the qualification criteria for listing on the FIDIC President's List of Approved Dispute Adjudicators, which are assessed by FIDIC and by its Assessment Panel, is the ability of the applicant 'to be impartial [and] objective'.

Complementing the FIDIC President's List of Approved Dispute Adjudicators, FIDIC also supports the development of national listings. Such national lists (based upon the FIDIC guidelines) have been created for example in Japan and France. Standards of adjudication on projects using FIDIC-based contracts are being monitored.

11.4 Enforcement of dispute board decisions

A dispute board is a creature of contract: the parties establish and empower a dispute board with jurisdiction to hear and advise on the resolution of disputes. Benefits and shortfalls of non-binding recommendations and interim-binding decisions are being dealt with in practice. As such, there is no clear answer whether to use recommendations or adjudication and the success of a particular dispute resolution procedure will depend on the circumstances, jurisdiction, skills and credit of board members, the needs and priorities of the parties and their cultural backgrounds (Chern, 2010).

11.4.1 Non-binding recommendations

Even if the dispute board recommendation is contractually non-binding, this does not appear to impair the practical impact of the decision. This is because the recommendation is admissible in later proceedings and it is highly likely the judge will be persuaded by an opinion from experts familiar with the project during its realization. As strengths of non-binding recommendations, the following are mentioned:

- persuasiveness of the opinion – particularly if the experts are respected individuals;
- tendency to adopt recommendations by the parties to avoid further conflicts in some cultures (conciliation in China);
- non-threatening process;

- the preparation time for hearings is less than in other forums;
- shorter hearings;
- reduced hearing costs; and
- pragmatic decisions which avoid arbitration and, potentially, litigation.

The weaknesses of non-binding recommendations are as follows:

- They enable the losing party to postpone the day of reckoning by proceeding to arbitration;
- The effect of the recommendation may be nil (Chern, 2012).

11.4.2 Interim binding decisions

A DAB decision is contractually binding with immediate effect. Thus the 'losing party' will be in breach of contract if it were not to pay/grant time in accordance with the DAB decision.

The strengths of an interim-binding decision are as follows:

- If necessary, a decision may be enforced by legal processes (this may not be without difficulty depending on the jurisdiction);
- The binding nature of the decision can lead to early settlement;
- Disrespecting the decision will lead to breach of contract.

The weaknesses of an interim binding decision are as follows:

- There is more at stake, so the parties fight harder;
- The hearing preparation costs, hearing time and other related costs are higher;
- More chance of legal representation;
- The final decision is removed from the parties;
- Some matters are complex and the time limits can be tested when much turns on the decision (Chern, 2012).

11.4.3 Contractual sanctions for non-compliance with dispute board decisions

Extensive discussion is under way relating to DAB decisions (under FIDIC forms) in respect of which a notice of dissatisfaction has been given within 28 days, i.e. a 'binding but non-final DAB decision'. The courts seem to interpret the respective FIDIC Sub-Clauses in a different way than their drafters intended (Seppälä, 2012).

A decision of the Court of Appeal of Singapore in *CRW Joint Operation v. Perusahaan Gas Negara (Persero) TBK* [2011] SGCA 33 is often quoted in this regard. In this case the court dismissed an appeal against the judgment of the High Court of Singapore setting aside an ICC arbitration award. The ICC Arbitral Tribunal, on the one hand, and two Singapore courts, on the other, arrived at widely different interpretations of Sub-Clauses 20.4 – 20.7 of the FIDIC CONS/1999 Red Book.

In some jurisdictions it is possible that a 'binding but non-final DAB decision' might be enforced by the local courts despite the presence of an arbitration clause (Butera, 2014).

The UK courts view such DAB decisions the same way as a decision in statutory adjudication which was developed for speedy dispute resolution on a provisional interim basis, and require the decisions of adjudicators to be enforced pending the final determination of the dispute in litigation or arbitration. The decision in adjudication is binding and to be complied with until the dispute is finally resolved. It does not matter if this duty is implied or agreed. As a result, the court is not permitted to investigate whether the decision was right or wrong. All that matters is whether the adjudicator had the jurisdiction to reach the decision that they did, and that they reached it by a fair process (See *AMEC Group Ltd v Thames Water Utilities Ltd*. [2010] EWHC 419 (TCC)).

When considering enforcement of interim binding dispute board decisions it is interesting to compare the opinions of lawyers from different countries (at http://globalarbitrationreview.com) who responded to the following questions:

- For a DAB decision awarding a sum to a contractor under, say, Sub-Clause 20.4 of the FIDIC CONS/1999 Red Book for which the employer has given a timely notice of dissatisfaction, in an arbitration in your jurisdiction, might the contractor obtain: (a) a partial or interim award requiring payment of the sum awarded by the DAB pending any final award that would be enforceable in your jurisdiction (assuming the arbitral rules are silent); or (b) interim relief from a court in your jurisdiction requiring payment of the sum awarded by the DAB pending any award?

They replied, as follows:

- *France*: Before the constitution of the arbitral tribunal, courts have wide powers to order interim measures, including a *référé*-provision, which allows a court provisionally to order payment of an undisputed amount. This would not be possible in the event of a DAB decision that has been the subject of a notice of dissatisfaction. Once the arbitral tribunal has been constituted, the courts' powers to order interim measures will then be restricted by the terms of the arbitration agreement. Given the wording of Sub-Clause 20.6 [Arbitration] of the FIDIC CONS/1999 Red Book, it is unlikely that a French court would accept jurisdiction in connection with a party's application for interim relief requiring payment of the sum awarded by the DAB. However, that party may apply for an interim or partial award (in respect of the other party's failure to comply with the DAB decision in breach of Sub-Clause 20.4) and, if successful, may seek to enforce that award in France (Gillion and Rosher at http://globalarbitrationreview.com).
- *Germany*: If not finally binding, a DAB decision for payment will not be enforced by the arbitration dispute nor may enforcement be sought by interim relief from a court. Interim decisions are not subject to enforcement. A party's failure to satisfy a binding DAB decision may constitute a new breach of contract entitling

the other party to additional damages, which are typically of higher interest on amounts due. Nonetheless, such a breach of contract would have to be determined by means of the arbitration proceedings. Interim relief is not available as the grant of payment under an interim order would constitute a preliminary decision on the merits which may not be rendered through interim relief (Kremer at http://globalarbitrationreview.com).

- *South Africa*: Where a construction agreement makes provision for an award to be made by the principal agent or DAB – which may be disputed in arbitration by timely delivery of a notice of dissatisfaction – the agreement will generally either stipulate expressly or tacitly whether the disputed award is capable of enforcement pending the determination of arbitration. Where the agreement is silent on the enforceability of such an award, the party disputing the award would in all likelihood be able to resist enforcement as it is contractually entitled to have the dispute determined in arbitration and should therefore not be required to suffer the prejudice of payment before determination of the dispute (Hoeben at http://globalarbitrationreview. com).

The approach of UK courts does not necessarily have to be universal. Therefore, (Butera, 2014) proposes the best procedure is to treat the failure to comply with the DAB decision as giving rise to another dispute (second dispute) that will be again referred to in the same DAB for its decision under Sub-Clause 20.4. The subject of this second dispute will be whether the DAB decision in the first dispute gave rise to an obligation to pay the amount of the decision and, if so, whether there was any legal justification for the respondent to withhold payment – and as to the relief to which the claimant is entitled. Once the DAB has made its decision in the second dispute, the same second dispute may then be referred to arbitration, the scope of which should be limited to the same issues. This approach was confirmed in ICC cases no. 15751 and no. 16948).

The merits of the first decision may nevertheless still be challenged by commencement of (separate) arbitration proceedings in relation to the first dispute.

As to the relief that may be granted, three options are discussed: (1) a claim for damages; (2) specific performance; or (3) to accept an opinion that a binding decision requiring payment of money creates a debt which may be enforceable as such.

In terms of a claim for damages, it would appear that the damages recoverable would be limited to a claim for interest and not the amount of the DAB's decision itself. Regarding specific performance, there are likely to be doubts whether the tribunal has the power to make such an order. Convincing the arbitral tribunal to exercise any such power will be difficult. The third option is that a contractual obligation to pay a sum of money is generally considered in common law jurisprudence to give rise to a debt.

(Lloyd & Jones, 2014) comment on Butera's conclusions and agree that the status of a 'binding but non-final DAB decision' is the same as the status of a certificate

that had been issued and not paid and on that basis it should be possible to allow for sanctions of suspension and termination to be available to a contractor.

Accordingly, where English law applies, the appropriate remedy in respect of failure to comply with a 'binding but non-final DAB decision' which required payment of a sum of money is an order for payment of that sum as a debt (Butera, 2014). Because of this uncertainty, FIDIC published a Guidance Memorandum to Users of the 1999 Conditions of Contract, dated 1st April 2013.

It is explained in this document that a substantial number of arbitral tribunals have found Clause 20 to be unclear on the issue of whether a party may refer the failure of the other party to comply with a DAB decision that is 'binding' but not 'final' to arbitration as is explicitly the case of a 'final and binding' decision under Sub-Clause 20.7. A DAB decision is 'binding' and not 'final' when either party, within 28 days after receiving the DAB decision, gives notice to the other party of its dissatisfaction with the DAB decision. International arbitral tribunals have been divided over whether, in the event of a failure to comply with a DAB decision issued under Clause 20 of the FIDIC CONS/1999 Red Book, which is 'binding' but not 'final', the failure itself may be referred to arbitration, without Sub-Clause 20.4 (Obtaining Dispute Adjudication Board's Decision) and Sub-Clause 20.5 (Amicable Settlement) being applicable to the reference.

The *FIDIC Guidance Memorandum* is designed to make explicit the intentions of FIDIC in relation to the enforcement of the DAB decisions that are binding and not yet final. Where there is a failure to comply with these decisions, the failure itself should be capable of being referred to arbitration under Sub-Clause 20.6 (Arbitration), without Sub-Clause 20.4 (Obtaining Dispute Adjudication Board's Decision) and Sub-Clause 20.5 (Amicable Settlement) being applicable to the reference. This intention has been made manifest in the *FIDIC Conditions of Contract for Design, Build and Operate Projects*, 2008 (the Gold Book) through Sub-Clause 20.9:

> In the event that a party fails to comply with any decision of the DAB, whether binding or final and binding, then the other Party may, without prejudice to any other rights it may have, refer the failure itself to arbitration under Sub-Clause 20.8 [Arbitration] for summary or other expedited relief, as may be appropriate. Sub-Clause 20.6 [Obtaining Dispute Adjudication Board's Decision] and Sub-Clause 20.7 [Amicable Settlement] shall not apply to this reference.

To make FIDIC's intention explicit, this Guidance Memorandum provides for changes to be made to the FIDIC dispute resolution Clause 20 (particularly Sub-Clause 20.7) and, as a consequence, to 14.6 and 14.8 of *the FIDIC Conditions of Contract for Construction*, 1999 (the Red Book), the *FIDIC Conditions of Contract for Plant and Design-Build*, 1999 (the Yellow Book), and the *EPC/Turnkey Projects*, 1999 (the Silver Book). Compliance with the guidance provided in this Memorandum is highly recommended when using the 1999 FIDIC Red, Yellow or Silver Books.

11.5 Statutory adjudication

Statutory adjudication by Nigel Grout (UK)

Statutory adjudication in the UK was established in 1998 when the Housing Grants, Construction and Regeneration Act 1996 (commonly referred to as the 'Construction Act') came into force. This Act gave parties to a construction contract a statutory right, save for a few exceptions, to unilaterally refer any dispute to adjudication at any time.

Prior to the provision of adjudication, the main means of resolving disputes in the construction industry was either by arbitration or court litigation. However, both of these methods were proving unsatisfactory due to their prohibitive costs, the length of time it took to get a decision, and the considerable cross-examination of witnesses. From the late 1970s and through the 1980s there were a high number of construction disputes in the UK, and the courts were experiencing rapid expansion in their workload for the construction sector. Consequently, it often took between 18 and 24 months for a case to be heard. Similar timescales were common in arbitrations.

The construction industry was also notorious for its bad payment culture, and this was made worse by the economic recession of the early 1990s. Against this background, and with litigation and arbitration still proving ineffective ways of enforcing payment, the Government and the UK construction industry jointly commissioned Sir Michael Latham to report on the industry. The publication of the Latham Report in 1994 recommended, *inter alia*, the introduction of statutory adjudication.

The main objectives of adjudication were to promote better cash flow, and to provide an interim binding, relatively cheap and quick means of deciding disputes until they were finally determined by arbitration or the courts. The ethos was 'pay first, argue later'.

In the early days of adjudication, one of the main concerns was that weaker contracting parties (generally subcontractors) would be reluctant to use the process as they might suffer the consequence of being denied future opportunities to tender for work. This concern proved unfounded, and adjudication quickly became the most popular process used in the UK to settle construction disputes arising under the contract.

Today, it is widely accepted that adjudication has been a success, and it continues to be by far the most preferred method for resolving construction disputes in the UK. The speed and cost effectiveness of the process are in contrast to the problems still associated with arbitration and litigation. Its popularity has had the consequential benefit of freeing up more court time, as the number of new proceedings in the Technology and Construction Court has decreased considerably from the pre-adjudication period. There has also been a substantial reduction in the number of construction arbitrations.

Another reason for the success is the willingness of the UK courts to enforce the decision of the adjudicator. Other than for reasons of jurisdiction and natural justice, there is very little scope for a losing party to escape interim compliance pending any final determination of the dispute. This robust enforcement policy has endorsed the objective of improving cash flow within the industry.

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11.5.1 UK Statutory Adjudication Regime

In the UK, Section 108 of Part II of the *Housing Grants, Construction and Regeneration Act 1996* ('the Act'; available at http://www.legislation.gov.uk/ukpga/1996/53), provides for a statutory right and prescribes procedural rules of adjudication (the *Users* '*Guide To Adjudication, Construction Umbrella Bodies Adjudication Task Group*, April 2003 ('Users' Guide') available at http://www.scl.org.uk/files/CUB_Users_Guide_May_2003.pdf). Pursuant to the Act, 'a dispute between parties to, and arising under, a construction contract, effective as of May 1, 1998 or later, may be referred for adjudication'. Disputes encapsulate 'any difference'.

The Act prescribes what provisions a construction contract shall contain in order to avail itself of the statutory regime. The contract shall thus provide for notices of a party's intention to adjudicate, set a timetable for an adjudicator's appointments and referrals, set time limits within which a decision must be reached and the adjudicator's powers. The Act also prescribes that the parties' contract shall 'impose a duty on the adjudicator to act impartially'. The Act further requires the parties' contract to provide that the adjudicator's decision be 'binding until the dispute is finally determined by legal proceedings, by arbitration … or by agreement'. The parties may also agree upon the acceptance of the adjudicator's decision 'as finally determining the dispute'.

Where the statutory requirements have not been complied with, the statutory regime of the Act will not apply and the Act itself falls back upon a default regime contained in the *Scheme for Construction Contracts (England and Wales) Regulations 1998* ('the Scheme').

11.5.2 The scheme for construction projects in the UK

Impartiality and independence are required of the adjudicator in the course of adjudication proceedings conducted pursuant to the Scheme. Paragraph 12(1) of the Scheme (which concerns the adjudicator's powers) imposes a duty upon the adjudicator to act impartially and in accordance with the law and the applicable contract. The duty of impartiality and independence also forms part of the requirement that the adjudicator must neither be biased (actual bias) nor must he or she be perceived to be biased (apparent bias), which is an aspect of the requirement of natural justice or procedural fairness. The second prong of natural justice is the duty to conduct a fair hearing.

The test for bias is objective: whether a reasonable observer would conclude that there is a *real possibility* of bias. Personal relations with a party to the contract and the proceedings, favouring or apparent favouring or supporting one party or interest in the adjudication are examples of bias.

The hearing shall be conducted fairly, that is, the parties shall have knowledge of the case and be given a reasonable opportunity to present their own case. Oral hearings do not seem to be a requisite part of the adjudication process and the adjudicator has the full discretion – within the limits and constraints of the law regarding procedural fairness – to decide whether or not to order an oral hearing or a meeting of the parties.

Lack of fairness during the adjudication process may be grounds for setting aside the adjudicator's decision by a court.

11.5.3 Some procedural aspects of statutory adjudication

Under the Scheme, adjudication may be initiated by serving a written notice of adjudication to the other party. The notice specifies the matters which the party seeks the adjudicator to decide. An adjudicator must be appointed within seven (7) days of the submission of the notice. The adjudicator may be named in the construction contract in question, the contract may specify a panel of adjudicators or an Adjudicator Nominating Body or, if the contract is silent on this issue, any Adjudicator Nominating Body may be approached. After an adjudicator has been appointed, a referral notice with information that the adjudicator ought to consider is sent to him or her and to the other party. Generally, a decision must be rendered within 28 days of the receipt of the referral notice by the adjudicator.

A party may challenge the adjudicator's jurisdiction, for instance, on the grounds of an alleged conflict of interest or that the underlying contract is not a construction contract within the meaning of the Act. While adjudicators generally (unless given such authority by the parties) lack the power to decide upon such jurisdictional challenges (i.e. they are left to the court), the adjudicators are advised to conduct an investigation into their jurisdiction and also in order to comply with their obligation to be, and appear, impartial.

In their decisions, adjudicators may issue an order to a party to pay money or may decide a fact or a matter of a technical nature that the parties failed to agree upon. The Scheme requires that reasons for the decision be provided to the parties if and where requested.

The adjudicator also decides which party pays the adjudicator's costs. However, under existing law, each party is responsible for bearing their own costs and the adjudicator lacks the power to award costs orders.

The party against whom the adjudicator's decision was given will either comply with the decision or the decision may be enforced in court (which, in most cases, will uphold it in a matter of days), unless a party succeeds with a jurisdictional challenge or attacks the adjudicator's decision on natural justice grounds, i.e., where the adjudicator had failed to act impartially or had not provided both parties with an opportunity to present their case. A party cannot appeal the adjudicator's decision but the matter may be heard as a new case, either in court or in arbitration proceedings.

Settling construction disputes in Hungary by Tamás Balázs (Hungary)

Two special Hungarian dispute resolution bodies need to be mentioned concerning the settlement of disputes in connection with construction contracts entered into on the basis of FIDIC terms and conditions of contracts. The power and procedures of these bodies to decide legal issues overshadow the triple hierarchy of FIDIC dispute resolution (Dispute Adjudication

Board – Amicable Settlement – Arbitration) in Hungary. Legislation enacted into force on 1 July 2013 (Act XXXIV of 2013 on the Expert Body for Performance Certification, hereinafter: the 'Act') set up the Expert Body for Performance Certification (EBPC) and regulated its functions and powers. The reason for enacting new legislation and establishing this body was in reaction to legal disputes having increased greatly in connection with the performance of construction contracts in recent years. Disputes were mainly between the employer and contractor and, to a lesser extent, between the contractor and their sub-contractors. Generally, these legal disputes took years to decide before a binding judgment was eventually handed down by the courts. The scope of the legislation covers all construction projects in Hungary. The Act states that contractual clauses that exclude or restrict the powers or procedures of the EBPC or which attach any negative, legal consequence to initiating EBPC procedures are null and void. Therefore, if the construction project is implemented in the territory of Hungary, we are faced with a mandatory provision of Hungarian law that cannot be bypassed even if choosing the law of another country. However, the EBPC does not have jurisdiction over all legal disputes in the construction sector. Its jurisdiction only applies:

(a) to those cases in connection with the performance of construction contracts when no performance certificate is issued;
(b) where the issuance of a performance certificate is disputed;
(c) payment is not made despite being due; as well as
(d) to those cases when the ancillary obligations to guarantee the contract (bank guarantee, lien, surety) and their enforcement are disputed by the parties.

It is to be emphasized that the *ex officio* procedure of the EBPC is not mandatory and can be initiated upon request of one of the parties. The Act grants priority and summary procedure to the parties involved in court litigation where they have attempted to use the EBPC. Presumably, this will motivate the parties concerned to avail themselves of the possibility granted by the new Act instead of opting for the much longer 'normal' court procedure. The EBPC comprises of independent court experts and must deliver its expert opinion in 30 days from the date of receipt of the application. The party that disagrees with the expert opinion can enter into litigation within 60 days from the date of its receipt and the court is obliged to handle all such cases with priority in a summary procedure. The amended *Code of Civil Procedure* provides a number of guarantee provisions and preferential treatment to the party which sustained injury according to the expert opinion (e.g. judicial protective measures and prior enforceability).

This procedure is particularly advantageous to the contractor if the employer disputes performance or certain aspects of performance stated in the contract. Provided that an EBCP review is allowed, the contractor will probably decide against using arbitration. The other special bodies created to decide legal disputes are the conciliation boards attached to the regional Chambers of Industry and Trade. This institution enforces consumer protection regulation in Hungary and its functions are accessible to the consumer. The definition of 'consumer' was broadened considerably as a consequence of an amendment to the *Consumer Protection Act* (2013) which came into effect in July 2013. The new definition covers not only natural persons acting to promote objectives outside the scope of their independent professions and activities but, among other things, micro, small and medium-sized enterprises in the European sense. The conciliation board can give a binding decision with regard to the enterprise which is subject to the

complaint but *only* if it made a statement of submission before the adoption of the decision. It is further possible – even in this case – for the entity subject to the complaint to start litigation (i.e. appeal) against the conciliation body's decision within 15 days of the decision. Where the terms and conditions of the FIDIC contract are used in Hungary, the contract must contain the rules for deciding legal disputes in accordance with the relevant contract templates. Failing that – and if the competent court and the applicable law are not specified – the registered office of the Hungarian company subject to litigation in Hungary or the site of the construction project in Hungary may lay the foundation for determining the jurisdiction of the Hungarian court (see also Chapter 20 of the 1999 FIDIC Red and Yellow Books). The functions of the EBPC overlap those of a Dispute Adjudication Board (DAB) under FIDIC if initiated by a party. Given the advantages of the EPBC mentioned above, the parties are likely to choose it over the DAB. The EPBC still remains somewhat of an 'unknown' in Hungary because Act XXXIV of 2013 providing for the rules of EBPC procedure only came into effect on 1 July 2013. It is important to note that Act XXXIV of 2013 states that contractual clauses that exclude or restrict the applicability of the procedure of EPBC are null and void.

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Statutory adjudication in Australia by Donald Charrett and Andrew Downie (Australia)

Cash flow is the lifeblood of the construction industry. The Australian construction industry includes many small organizations that rely on the cash flow from regular progress payments in order to pay their employees and creditors. Such companies are financially vulnerable to their employers withholding payment for any reason, whether valid or not.

The final report of the Cole Royal Commission into the Australian building and construction industry in 2003 (The Hon. T. R. H. Cole QC, *Final Report of the Royal Commission into the Building and Construction Industry*: Vol. 8 (2003), Appendix 1) made recommendations on 'one of the most significant and controversial issues impacting the success or failure of any party working in the construction industry'. The report highlighted the rationale for security of payment as follows:

> Commission investigators were repeatedly told of the suffering and hardship caused to subcontractors by builders who are unable or unwilling to pay for work from which they have benefited. The subcontractors who experience payment problems are often small companies or partnerships. Frequently they do not have the expertise or resources to enforce their legal rights, because enforcement would require protracted litigation against much better resourced and more sophisticated companies.

> Consequently, subcontractors that have operated profitably and well for many years can be forced into liquidation through no fault of their own, often with devastating consequences for the owners of these businesses, their families, their employees and their creditors.

Prior to the Royal Commission's recommendations, the States of New South Wales and Victoria had each passed a Building and Construction Industry Security of Payment Act that addressed the issue of prompt payment. The Royal Commission's recommendations included the enactment of a Building and Construction Industry Security of Payment Act by the Commonwealth of Australia, along the lines of a draft Bill in the Royal Commission Report. The aim of this recommendation was to achieve uniform legislation across all States and Territories. Unfortunately, the Commonwealth has never enacted legislation, with the inevitable consequence that Australia now has eight different Acts for security of payment, each of them different.

The various Security of Payment Acts all set up a system of progress payments, rapid adjudication of payment disputes and contract reform. The first Act (NSW) included similar adjudication provisions to the Housing Grants, Construction and Regeneration Act 1996 (UK), and formed the model upon which other Australian jurisdictions, to varying degrees, based their legislation. Unlike the UK Act, however, statutory adjudication in Australia is confined to disputes over payment. Not only are there significant differences in detail between the individual Australian Acts, there are conceptual differences between the Western Australia and Northern Territory Acts ('west coast model') and the Acts in the other jurisdictions ('east coast model'). The west coast model is similar to the construction industry payments legislation proposed by the Cole Royal Commission Report, and is more in harmony with the legislation passed in the UK and NZ.

> Whilst both models allow for a statutory adjudication scheme to determine, in the interim, disputed payment claims, they differ with respect to adjudicator appointment, submissions which may be considered by an adjudicator, and the approach which an adjudicator is to adopt in order to arrive at his or her determination. In all of these respects the East Coast Acts are more restrictive, disallowing mutual agreement of an adjudicator, consideration of reasons for withholding payment which have not been duly submitted in accordance with the statutory payment scheme, and discouraging an evaluative approach to adjudicators' determinations.
>
> (Coggins et al. 2003)

The significant differences between the Acts and between the east coast and west coast models means that there is no 'Australian adjudication' as such. As space here does not permit further comparison of the differences between the various Acts, the following description refers to the operation of the Building and Construction Industry Security of Payment Act 1999 (NSW) ('the Act').

Main features of the Act

The Act provides various statutory entitlements that operate in addition to (or in substitution for inconsistent) contractual provisions. Operation of the Act is mandatory for any 'construction contract', covering both 'construction work' and 'related goods and services' as broadly

defined. However, there are significant carve-outs for, e.g. extraction of oil and gas or minerals and residential construction, with the consequence that it does not apply to a substantial part of construction work in NSW. The Act provides an entitlement to progress payments, either in accordance with the provisions of the contract, or at monthly intervals if the interval is not specified in the contract.

The Act fetters freedom of contract in several ways. Thus, 'pay when paid', or 'pay if paid' provisions in a contract are of no effect. Further, in the event that the agreed amount of a progress claim or the adjudicated amount is not paid, the claimant may stop working under the contract after giving two business days' notice. These provisions may not be contracted out of.

The Act specifies a formal procedure that must be followed to recover progress payments, and details the consequences if payment is not made. In the event of a dispute over payment, the claimant can initiate an adjudication process that is intended to be speedy and cost-effective. Adjudication is carried out by an adjudicator who is formally accredited by an 'authorized nominating authority'. There is an expedited process for a claimant to obtain a debt judgment in court of a progress payment or the adjudicated amount of a progress payment.

It is important to note that the Act is directed to maintaining cash flow in relation to progress payments, and does not override other legal rights that either party has under the contract or the law. An adjudication determines the amount of a progress payment on account only, and does not provide a final determination of the parties' legal rights. A respondent that is required to pay an adjudicated amount may therefore seek to recover that amount in subsequent court or arbitration proceedings, if the respondent can prove its legal entitlement pursuant to, e.g. defect rectification or liquidated damages for late performance. Nevertheless, in practice, the adjudicated amount frequently becomes a final payment, as few payment disputes proceed to an ultimate determination of legal rights in arbitration or litigation.

Progress payments and adjudication

As the statutory entitlements under the Act are additional to the provisions of the relevant construction contract, certain formalities must be complied with to invoke its operation. Thus, a 'payment claim' must identify the construction work carried out or the relevant goods and services supplied, the amount of the claim and that the claim is made under the Act (this formal requirement will no longer apply when the provisions of the *Building and Construction Industry Security of Payment Amendment Act* 2013 (NSW) are implemented). A payment claim must be made within the time provided for in the contract, but no more than 12 months after the relevant work was carried out or the goods and services supplied. Only one payment claim may be made in respect of each 'reference date'.

The person from whom payment is claimed ('the respondent') may respond by providing a 'payment schedule' detailing the amount the respondent proposes to pay, and must specify the reasons for any difference between that amount and the amount claimed. If the respondent does not serve a payment schedule within the time provided by the contract, or a maximum of 10 business days, it becomes liable to pay the amount of the payment claim in full. In that event, the claimant may either recover the amount claimed as a debt in court, or make application for adjudication.

Similarly, if the respondent does not pay the full amount in its payment schedule by the due date, the claimant may either recover the amount claimed as a debt in court, or make application for adjudication. If the claimant seeks to recover the amount claimed in court, the respondent

may not bring any cross-claim or raise any defence in relation to matters arising under the construction contract. Amendments made to the Act in 2013 mandate payment periods for progress payments, irrespective of the provisions of the contract.

The claimant initiates an adjudication of its claim for a progress payment by submitting an application to an authorized nominating authority of its choice. If the respondent has not provided a payment schedule, the claimant must provide notice before submitting an adjudication application, and give the respondent 5 business days to provide a payment schedule. There are strict time limits for submission of an adjudication application: within 10 business days after a payment schedule has been received, within 20 business days after the due date if payment was not made in accordance with the payment schedule, and within 10 business days after the 5-day period to provide a payment schedule if it was not originally provided.

The adjudication application may contain any relevant submissions that the claimant chooses to provide. An adjudication application must be served on the respondent. The authorized nominating authority must refer the application to an authorized adjudicator as soon as possible. The adjudicator accepts such nomination by serving a notice on the claimant and the respondent.

If, and only if, the respondent has provided a payment schedule, it may submit an 'adjudication response' within five business days of receiving the adjudication application, or within two business days of receiving the adjudicator's acceptance of nomination. The adjudication response may contain such information as the respondent chooses to include, but may not include any reasons for withholding payment unless those reasons were already included in the payment schedule provided to the claimant.

The adjudicator may not determine the matter until after the period for submission of the adjudication response, and may not consider an adjudication response submitted outside the prescribed time. The adjudicator must determine the matter as expeditiously as possible, but within 10 business days after having notified the parties of acceptance of the nomination, unless the claimant agrees to an extension of time for the adjudication.

The adjudicator may call for further submissions, call an informal conference of the parties (without legal representation) or make an inspection of the subject matter of the claim. Failure of a party to make a submission or comment does not affect the adjudicator's obligation to make a timely determination. The adjudicator must determine the amount of the progress payment to be paid (if any), the date on which it is to be paid, and the rate of interest on any outstanding amount.

The adjudicator's determination must be in writing, and must include reasons, unless both parties agree otherwise. In making his/her determination, the adjudicator must only consider the provisions of the Act, the contract, the payment claim and payment schedule, submissions made to the adjudicator and the results of any inspection. The adjudicator may make a correction to the determination arising from a clerical mistake, an error arising from an accidental slip or omission or material miscalculation or a defect of form.

The respondent is liable to pay the adjudicated amount within five business days of service of the determination, or by such other date as the adjudicator determines. If the respondent does not pay the adjudicated amount in full within the prescribed time, the claimant may request the authorized nominating authority to provide an 'adjudication certificate'. That certificate may be filed in any court of competent jurisdiction as a judgment debt and enforced accordingly. If the respondent files proceedings to set aside such judgment, it may not raise any cross-claim or any defence in relation to matters arising under the construction contract, or challenge the

adjudicator's determination. Further, it is required to pay into court the unpaid amount of the adjudicator's determination pending the outcome of its claim to set aside the judgment debt.

Main advantages of adjudication

The 'quick and dirty' adjudication process provided for in the Act provides an affordable and speedy process for claimants to be paid progress payment amounts they are entitled to. Time of payment is fundamental to maintaining cash flow, and in many cases to the financial viability of contractors and subcontractors. Recourse to adjudication under the Act levels the playing field by ensuring that large organizations with substantial assets cannot use long delays in the legal system to negotiate unfair or unwarranted financial concessions from their contractors or subcontractors. Even where the Act is not invoked, its existence discourages bad behaviour up the contracting chain.

Although conducted within a very tight timeframe, the parties are arguably afforded some measure of procedural fairness (but see Coggins et al. above), and determination of the adjudicated amount is made in accordance with the law and the contract, and the available evidence. In theory, there is some quality control on the process by virtue of authorized nominating authorities that maintain lists of qualified adjudicators. However, the significant number of adjudication determinations quashed in court proceedings (see below) indicates that in practice there is a problem of quality control in the appointment and registration of adjudicators.

The process is designed to promote a 'pay now and argue later' mentality, by facilitating payment of progress claims that are *prime facie* genuine, without compromising the parties' ultimate legal rights. A respondent can still initiate legal proceedings to enforce its ultimate legal rights, irrespective of any payments that have been made in response to adjudication determinations, although this rarely occurs in practice.

Issues arising from operation of the Act

The Act applies to all work and goods and services carried out under a 'construction contract' (subject to the defined carve-outs of specific types of construction work), irrespective of the magnitude or complexity of a progress claim. A claimant may have many months to prepare a large and complex claim (that may subsequently form the basis of an adjudication application), comprising many Lever arch folders of material, which may be served at a time chosen by the claimant (perhaps Christmas Eve). The respondent then has a very limited time to digest this material and respond – no more than 10 business days for a progress claim and five business days for an adjudication response. This is clearly inadequate for complex multi-million dollar claims (the largest adjudicated amount in Australia is in excess of $50 million). Similarly, the prescribed period of 10 business days for the adjudicator's determination is inadequate for large and complex claims. Any extension to such time is subject to agreement by the claimant who has every reason to require the adjudication determination in the shortest time possible, and veto any request for a time extension.

The claimant's sole choice of authorised nominating authority has proved to be problematic, as there is evidence that some authorities are much more 'claimant friendly' than others. Further, the amount of fees charged by some 'for-profit' authorized nominating authorities appears to be disproportionate to the services they render, adding further unwarranted expense to the process.

The objects of the Act are fulfilled by payment of progress payments pursuant to adjudication determinations. Such payments are inevitably used in the claimant's cash flow in running its business. In a situation where the respondent has a legitimate claim against the claimant, it will only recover the amount it is legally entitled to after lengthy (separate) court or arbitration proceedings. Such vindication is of little value, if, in the intervening period since payment was made pursuant to the adjudication determination, the claimant has become bankrupt or gone into liquidation.

This issue is a consequence of the 'pay now and argue later' principle, and is probably the reason why there have been so many court cases over virtually every aspect of the Act – where the respondent is required to pay a large sum pursuant to an adjudication determination, it is unsurprising if it pursues every legal challenge to that determination if there is any doubt about its ultimate recoverability pursuant to the respondent's legal rights.

Are the legislative objects being achieved?

Arguably, the east coast model (including the Act) is achieving its aims of providing 'a fast, cheap, non-legalistic way of resolving payment for work done or material or services supplied' (Victorian Building Commission, Introduction to the *Building and Construction Industry Security of Payment Act 2002* (Victoria), at www.buildingcommission.com.au) to improve timely cash flow in the construction industry. There are a significant number of adjudications under the Acts in NSW and Queensland: by 2008/09, the number of annual adjudication applications in each jurisdiction had reached approximately 1000, and the total value of payment claims in adjudication approximately $200 million.

However, many aspects of the Act have been problematic. There has been, and still is, considerable litigation over the Act – over 320 cases in the Supreme Court or Court of Appeal, the majority being cases where a respondent has attempted to have at least a part of an adjudicator's determination set aside (for an analysis of the case law in NSW and Victoria, see (Wilson, 2014)). After 14 years of operation of the Act, there were still 23 cases in 2012 seeking to challenge an adjudication, and some 80% of these resulted in overturning of the adjudicator's determination on jurisdictional grounds, taint of bias, etc. A recent thorough investigation of the operation of the various *Security of Payment Acts* in Australia resulted in a number of recommendations for significant reform of the east coast model to address its identified shortcomings (Australian Legislation Reform Sub-Committee of the Society of Construction Law Australia, 2014).

Notwithstanding over 13 years operation of the Act, there are still problems of insolvency in the construction industry. A (2013) report made a number of recommendations to alleviate this problem, including the implementation of a statutory construction trust. In response to this report, the Act was amended with respect to the timing of, and other requirements for, payments under construction contracts (several of which are identified above). These amendments simplify the procedure a subcontractor must undertake to obtain payment of an adjudicated amount (*Building and Construction Industry Security of Payment Amendment Act 2013* (NSW)). Details of the amendments were outlined in the Second Reading Speech of the *Building and Construction Industry Security of Payment Amendment Bill 2010* (NSW) by the Honourable Michael Veitch. However, there is controversy in relation to the unintended consequences of these amendments and as to whether they will achieve their aims. In the words of one author:

Bizarrely, the Bill [to amend the Act] is anathematic to the central recommendation of the construction trust, and seems set, if passed, not only to reduce the effectiveness of the existing security of payment legislation, but also to itself be the cause of increased insolvency and to cause a mass criminalisation of the NSW construction market.
(Fenwick Elliott, 2013)

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12 FIDIC

12.1 FIDIC expansion

The conditions of contract prepared by the *Fédération Internationale des Ingénieurs-Conseils* (International Federation of Consulting Engineers, FIDIC) are nowadays the most widely used sample forms of contracts for construction projects. These sample documents are known as the 'International Best Practice Documents' and are enjoying ever growing popularity. This is mainly thanks to significant international lenders who demand generally accepted and proven 'rules of the game' in their construction projects. One of the advantages of FIDIC forms is that the user is presented with a complete toolbox of documents. Without these, successful realization of a project would be practically impossible. The documents include a variety of samples and templates ranging from tender forms right up to dispute adjudication issues. Commentary, explanations and user instructions can also be found in individual FIDIC forms.

12.2 FIDIC

The International Federation of Consulting Engineers was founded in France in 1913 and is based in Geneva, Switzerland. Following its initial establishment, the organization expanded rapidly thanks to new membership from around the world. FIDIC is a non-government organization recognized by the United Nations, by major global banks, the European Commission and other international institutions. FIDIC was set up to support and promote the overall interests of its member associations. The organization's growth peaked in the post-WWII era when it started expanding at such a rate that it now unites associations from almost 100 countries on all continents.

The first sample, *Conditions of Contract for Works of Civil Engineering Construction* were released in 1957. This sample gave rise to the tradition of the 'FIDIC Red Book'. Due to ever-advancing technological developments in the construction

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industry, it became clear that contractual conditions would become redundant over time and would need to be revised. In 1999 the latest and the most used volume entitled the 'First Edition' came into existence with its Red, Yellow and Silver Books. These are the terms most often used by construction practitioners though the official abbreviations are CONS, P&DB and EPC. To distinguish the 1999 forms from the older versions they are sometimes referred to as the 'New Red, Yellow and Silver Books'.

According to FIDIC Statutes and By-Laws (October 2011), the Federation's objectives are:

1. to represent the consulting engineering industry globally;
2. to enhance the image of consulting engineers;
3. to be the leading authority on issues relating to business practice;
4. to promote the development of a global and viable consulting engineering industry;
5. to promote quality;
6. to actively promote conformance to a code of ethics and to business integrity;
7. to promote commitment to sustainable development.

12.3 FIDIC's influence on the construction industry

In recent years, FIDIC has experienced growth in its influence on the construction industry worldwide. With the spread of globalization, international organizations are looking for a uniform set of construction project standards independent of countries and governments. Such organizations include the World Bank, the European Bank for Reconstruction and Development, the Inter-American Development Bank, the African Development Bank and the Islamic Development Bank. Various other organizations are cooperating with FIDIC to develop broad, worldwide standards of business practice, ranging from the International Standards Organization, the International Labour Organization and others such as Transparency International or the United Nations Environment Program. Close cooperation with the above-mentioned organizations (and others) is helping the development of widely used best practice standards, not only for consulting engineers, but for the wider construction industry and business in general. Clearly defined, well-known and globally recognized standards are helping to reduce various costs and to develop a predictable legal and business environment. This applies not only to countries in the developing world, but to countries of the developed world as well. FIDIC promotes its objectives through annual meetings and conferences. The first was held in London in 1988 with cities in South-East Asia, the Middle America and North America added to the FIDIC annual program in recent years. Moreover, about 100 training events are held annually worldwide.

12.4 FIDIC membership

The nature and type of organizations who are FIDIC members are diverse. They range from individual members from independent countries to regional federations

and broader member associations. For example, the African members of FIDIC associate themselves with the Group of Africa Member Associations (GAMA) with its FIDIC Regional Office in Dar-es-Salaam, Tanzania. Members from the Asia Pacific region are associated with the Asia-Pacific Group (ASPAC). The most important and influential members of FIDIC are regional federations, such the Pan American Federation of Consultants (FEPAC) and the European Federation of Engineering Consultancy Associations (EFCA). The latter closely cooperates with FIDIC in various areas and with international governmental and non-governmental organizations and individual states.

Aware of the growing popularity and support for its activities, FIDIC organizes a number of training events to help local businesses expand globally and to spread FIDIC values. These activities have culminated in the development of the *Business Practice Training Manual* which is applicable in both the developed and developing world. Moreover, the organization of International Training Programmes (in cooperation with member associations) is ongoing. FIDIC also accredits trainers and training suppliers through its *Accredited Trainer and Development Programme*. Online training courses are available directly from FIDIC.

FIDIC training is focused on hard skills (such as the mastering of contract conditions and their use) and soft skills (such as the development of managerial skills) required for successful project implementation. The former includes courses on Professional Services Agreements, Practical Use of FIDIC Contracts, Claims and Dispute Resolution, Dispute Adjudication Boards and Contract Management. The latter comprises courses such as Business Development, Business Administration, Risk Management, Quality Management, Business Integrity Management and Project Sustainability Management.

12.5 Networking activities

FIDIC influence goes beyond the formalities of international best business practice and commercial relationships. FIDIC's informal (but significant) influence on the opinions of global leaders and decision-makers is, arguably, even more important. Numerous meetings and events help FIDIC participants from across the globe to build specific professional communities, spread ideas and exchange valuable contacts. Networking and gatherings of consulting engineers, clients, contractors and other professionals are crucial to promoting FIDIC values. Therefore, these events are strongly supported by the organization.

FIDIC currently presents the most common form of contract in large construction projects. These include monumental nation-building efforts such as the re-building of Libya after the Arab Spring revolution, the development of an independent Timor-Leste and the building of infrastructure for the FIFA World Cup in Qatar in 2022.

FIDIC is currently involved in a vast field of global activity. Such worldwide presence and influence also bring with it substantial responsibility and related commitments. Therefore, FIDIC representatives and members decided to use their organizational capabilities to promote values of sustainable development. Consultants participating in development and infrastructure projects can (and are

encouraged to) use their experience and knowledge directly in cooperation with project investors and clients. Using valuable know-how from the beginning of every project to realization helps make it more effective and sustainable in every aspect.

12.5.1 Translations and local use of FIDIC forms

The FIDIC official position on copyright, modifications and translations is that FIDIC discourages modification of the information and services it supplies, and only in exceptional circumstances will authorize modification, reproduction or incorporation elsewhere. Permission to quote from, incorporate, reproduce or copy all or part of a FIDIC publication, including documents, conditions of contract, web pages and similar supports for information, should be addressed to the FIDIC Secretariat, which will decide upon appropriate terms. A licence to prepare a modified publication will be agreed to under certain conditions. Specifically, the modified publication must be for internal purposes only, and not be published or distributed commercially. Under conditions which it will determine at its own discretion in each case and for a suitable consideration (usually, in the form of a licence fee), FIDIC may agree to let other parties (normally, a Member Association) to make translations and publish the translated publication. Conversely, translating FIDIC publications or publishing such translations without FIDIC's duly obtained agreement is unlawful and may be sanctioned. The general principles under which FIDIC may grant such agreements and which should be used when interpreting any licence given, are set out in guidance notes and a sample form of contract that are available from the FIDIC Secretariat. FIDIC will not authorize translations; in particular, FIDIC will not make any engagement or assume any liability concerning their completeness or correctness or adequacy for any purpose. Any such engagement or liability lies with the translator or the publisher of the translated document.

There are official translations of CONS available, for example, in Arabic, Bahasa, Bosnian, Chinese, Estonian, French, Japanese, Latvian, Polish, Portuguese, Romanian, Russian, Slovak, Spanish, and Vietnamese. P&DB is also available in Hungarian.

CONS and P&DB are extensively used for domestic projects, for example, in Poland, Slovakia, the Czech Republic, Hungary, Bulgaria, Romania, Croatia, and Serbia. There are several translations of FIDIC forms in Poland, one of them prepared by SIDIR (Stowarzyszenie Inżynierów Doradców i Rzeczoznawców, in English: Consulting Engineers and Experts Association).

To meet the public procurement needs in Estonia, the EAACEC (the Estonian Association of Architectural and Consulting Engineering Companies) have translated, among others, CONS and P&DB, both frequently used there.

According to HELLASCO (the Hellenic Association of Consulting Firms), there are no Greek translations. The same applies to Sweden, as reported by STD (the Swedish Federation of Consulting Engineers and Architects), Holland according to ONRI (the Dutch Association of Consulting Engineers), and Denmark as per FRI (Foreningen af Rådgivende Ingeniører). FIDIC forms are used in those countries only on international projects. Local forms of contracts have long been used there to meet the needs of local construction projects. Also according to ACE

(the Association of Consulting Engineers), the FIDIC forms are not used in the UK, except on international projects. In the United Kingdom, the NEC is used (the New Engineering Contract) and JCT (Joint Contracts Tribunal), like VOB (*Vergabe- und Vertragsordnung für Bauleistungen*) in Germany.

According to USIC (*Union Suisse des Sociétés d'Ingénieurs-Conseils*), there are no local Swiss translations and the FIDIC forms do not enjoy much popularity in Switzerland, with the contracting processes varying from canton to canton. However, the ASINCE (*Asociación Española de Empresas de Ingeniería, Consultoría y Servicios Tecnológicos*) of Spain has its own translation.

As advised by ACEA (the Association of Consulting Engineers of Australia), the FIDIC forms are used in Australia in public projects financed by banks.

As reported by SAACE (the South African Association of Consulting Engineers), English-language FIDIC documents are extensively used in South Africa, having a long tradition there.

As per ACEZ (the Association of Consulting Engineers of Zambia), the FIDIC forms are not used to any great extent in Zambia, nor are any standard conditions. But there is, at the moment, a drive to extend and draw up some local versions of them.

FIDIC forms are widely used even in China, mainly in support of the projects funded by the World Bank, the Asian Development Bank and by other international agencies.

The use of FIDIC forms in Southeast Asia by Salvador P. Castro, Jr. (The Philippines)

FIDIC contracts are globally accepted as recognized international construction contracts. However, it appears that there are constraints or barriers in the use of the FIDIC contracts in Southeast Asia. These barriers are raised by employers, both in government and in the private sectors, by local contractors, and even by local consulting engineers despite the fact that FIDIC contracts were developed by consulting engineers and experienced lawyers, and in spite of the recognition that their conditions are widely applicable to the civil law and common law jurisdictions.

It was only in the past 10 years, and more so in the past five years, that we have observed a rise in the use of FIDIC contracts probably as a result of the introduction of the MDB Harmonised Editions by the multilateral banks, such as the World Bank, the Asian Development Bank and, recently, by the Japan International Cooperation Agency (JICA), in their foreign-funded, local and foreign joint venture infrastructure projects in the region.

However, a number of the construction contracts used in the region are what we call the 'modified FIDIC' or 'patterned after FIDIC', some of which we believe are not based on FIDIC at all.

We conducted an informal survey among participants who attended the JICA Practical Project Management Program, a JICA-grant project conducted in Manila since 2009. One of the questions we asked was: 'Why is FIDIC not widely used in the infrastructure projects in your country?'

The 1000 or so participants comprised contract users (government and a few contractors and local engineers) from Bangladesh, Bhutan, Cambodia, Laos, Myanmar, Indonesia, the

Philippines, Thailand, Sri Lanka, Vietnam, and as far away as Mongolia and Jordan. These are countries where the JICA has a presence.

Another survey was informally conducted among the participants of an in-house FIDIC contract training programme in a Philippine construction firm with local and international operations. The key answers common to the majority of participants were:

> FIDIC contracts in government projects are not used because they contradict our laws and government standard contracts.
>
> Cultural differences in our country. We are too sensitive in so many aspects.
>
> DAB is expensive and deleted in our contracts. There is no accredited DAB in the region.
>
> FIDIC is strict and our government and other disciplines have an impression that FIDIC is a straitjacket contract and does not allow owners' flexibility.
>
> Due to lack of knowledge of FIDIC, it is seen as an adversarial contract due to a lot of notices and time limits (more education of the engineers and lawyers is needed).

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The use of FIDIC forms in Russia by Dmitry Nekrestyanov (Russia)

We are still not able to say that FIDIC contracts are well known and widely used in the Russian construction market. One reason for that is the current official translation of the FIDIC books into Russian. As the translation is quite bad, the popularity and confidence in this form tend toward zero for any contracts with Russian-speaking parties.

However, the trend in using FIDIC contracts in major construction projects is very clear. As an example of a project realized under FIDIC, the construction of the new terminal in Pulkovo Airport, St. Petersburg, comes to mind. Some of the enormous construction work carried out in preparation for the Winter Olympic Games was also realized under FIDIC (e.g. the new Park Inn hotel in Sochi).

What you should know when applying FIDIC principles in Russia:

1. The most popular forms of FIDIC contracts are contained in the 1999 Silver and Red Books.
2. Once the contract is signed in Russian, parties need to be very careful about the translation. There is no official translation of FIDIC contracts in Russian and most of the existing, unofficial translations are rather inaccurate.

3. There are a number of imperative provisions of Russian construction law that are different to those in FIDIC contracts. Thus, FIDIC contracts suffer because quite lengthy amendments need to be made to make them compliant under Russian law. First of all these amendments refer to: (1) the dispute resolution procedure; (2) how amendments in scope and price of works are dealt with; and (3) the status and the role of the engineer. As a result, the applicable law of a FIDIC contract is not usually compatible with Russian law.
4. Using FIDIC contracts is still considered like a kind of 'high-class pilotage for the parties', so to make it work in reality, Russian parties are better off involving experienced consultants.

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The use of FIDIC forms in Brazil by Rafael Marinangelo (Brazil)

The importance of the FIDIC forms of contract in the Brazilian construction market is obvious. FIDIC forms, as an instrument widely used by international funding agencies, are gradually being implemented in infrastructure construction project negotiations in Brazil.

Contracts entered into by *Companhia de Saneamento Básico do Estado de São Paulo* – SABESP (Brazil's São Paulo state water utility, the country's largest water company, providing water and sewerage services in 363 municipalities and serving more than 27.1 million residential, commercial and industrial clients or 60% of the state's urban population) and by *Companhia Paulista de Trens Metropolitanos* – CPTM (São Paulo Metropolitan Train Company, a commuter rail company owned by the São Paulo State Secretariat for Metropolitan Transport, and part of the Greater São Paulo rail network. CPTM has 89 stations in six lines, with a total length of 260.8 kilometres), to name just two examples, involve the use of FIDIC forms – thanks partly to foreign funding of these projects.

When not used in a complete form, the FIDIC patterns and principles appear in many contracts partially, denoting an inevitable trend of civil engineering and large building construction projects to approach contractual practices with the professionalism required worldwide.

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12.6 FIDIC forms of contract

At present, the most popular FIDIC sample conditions of contract are those published in the 1999 First Edition. In particular:

(a) *Conditions of Contract for Construction* (abbreviated as 'CONS' or the 'Red Book'), being the conditions with well-balanced risk allocation and intended for projects where the risks associated with the design are to be borne mainly by the employer. CONS are the contractual conditions for the General Contracting (GC) delivery method. It is common in such arrangements that the employer (their designer) prepares a detailed design including the bill of quantities, specifications and drawings for the purpose of the tender (terms of reference). The contractor evaluates the rates and prices of the tender bill of quantities. Works are measured on the basis of actually completed works, using the fixed rates and prices. Contract administration is done by the Engineer.

(b) *Conditions of Contract for Plant and Design-Build* (abbreviated as P&DB or the 'Yellow Book'), being the conditions with well-balanced risk allocation and intended for use in Design-Build (DB) projects where risks associated with design are to be borne mainly by the contractor. Unlike CONS, P&DB does not use the employer's detailed design for the purpose of the tender (terms of reference). These come from the 'Employer's Requirements' which define, above all, the purpose, scope, standard, performance and other criteria, depending on the employer's expectations and priorities. The employer's requirements are not assumed to contain exhaustive details. The contractor shall prepare their proposal based on the employer's requirements to become part of the contract. Even though the contract price is taken as a lump sum price, it may be subject to modifications through variations and claims raised for additional payments and extensions of time. Contract administration is done by the Engineer.

(c) *Conditions of Contract for EPC/Turnkey Projects* (Engineer, Procure and Construct, abbreviated as EPC or EPCT or the 'Silver Book') are intended for DB projects where most of the risks are allocated to the contractor. These risks are typically associated with design, site conditions and complications affecting time and price. This form is recommended where entire investment sets (such as nuclear power plants) are to be contracted out and where the requirement is to secure, more reliably, total price and completion time. It also applies to EPC that the price is taken as a lump sum. Works are not measured, but they can become subject to modification through variations and a limited number of claims raised for additional payment and extensions of time. Contract administration is done by the employer or their representative.

It is necessary to be able to distinguish between P&DB and EPC conditions. FIDIC discusses cases and circumstances when it is recommended applying P&DB conditions in practice. These are as follows:

- Insufficient time or information for bidders to scrutinize and check the employer's requirements or for them to carry out their own designs, risk assessment studies and estimations.
- If construction will involve substantial underground work or will take place in other areas which bidders cannot inspect.
- If the employer intends to closely supervise or control the contractor's work, or to review most of the design.

- If the amount of each interim payment is to be certified by a contract administrator or other intermediary.

FIDIC has published many other forms of contract and documents including the Short form of Contract or the 'Green Book'. These are contractual conditions intended for construction works which are of small value or straightforward. Furthermore, there are the '*Conditions of Subcontract for Construction*', i.e. a Construction Subcontract, issued by FIDIC in 2009 for use in combination with CONS.

For DB projects where an operation period is needed, FIDIC prepared *Conditions of Contract for Design, Build and Operate Projects* (abbreviated as DBO or the 'Gold Book') in 2008 (First Edition). This form reflects the trend that contractors not only construct but also maintain and operate the facility for some time.

FIDIC has also published a Client/Consultant *Model Services Agreement* in the fourth edition in 2006 (the 'White Book') and the Model Representative Agreement in the first edition in 2013 (the 'Purple Book').

The terms of the Model Representative Agreement are intended for consultants wishing to enter into a contract with a representative to provide representative services.

12.7 The structure of the contract under FIDIC forms

The main structure of the contract is defined in Sub-Clause 1.5 (1999 Edition). Documents forming part of the contract are to be taken as mutually explanatory of one another. For the purposes of interpretation, the weights of the individual documents are determined in this Sub-Clause. If any ambiguity or discrepancy is found in the documents, the engineer shall issue any necessary clarification or instruction. The specific parts and details as found in particular forms are described below.

12.7.1 Particular conditions

FIDIC recommends that their forms be subdivided into general and particular sections. In the 'particular section', there should be provisions in respect of the specifics of a particular project, employer, lender or of a given governing law. The general section should be left unchanged. This approach (i.e. the use of two separate sections) is practical and purposeful because it is quite obvious how the general part within a particular tender may have been changed. As an annex to individual forms, FIDIC forms include elaborated guidelines for preparing these particular conditions, giving comments and instructions (including alternative wordings) on how to modify the individual articles of the general part.

Supplementing CONS and P&DB, other practical information appears in a specific document called the 'Appendix to Tender', namely:

- Name and address of the employer
- Name and address of the contractor
- Name and address of the engineer
- Time for completion
- Defects notification period
- Systems of electronic transmission
- Governing law
- Official language
- Language for communications
- Time for access to the site
- Amount of performance security
- Normal working hours
- Lump sum for delay damages
- Provisional sums
- Adjustment for changes in costs
- Total advance payment
- Number and timing of instalments
- Currencies and their fluctuation
- Percentages of retention
- Currency of payment
- Insurance policy submission dates
- Dispute Adjudication Board

Some other items are facultative. There is no Appendix to tender under EPC.

12.7.2 Employer's requirements

As per P&DB and EPC, the contractor is, in principle, responsible for the design, workmanship and sequencing of the works. When completed, the work must meet its intended purpose as required by contract – namely, the employer's requirements and the contractor's proposal. Under EPC, the contractor's position is more complicated, as the employer's requirements are considered to have been 'scrutinized' in detail by the contractor prior to base date (Sub-Clause 5.1). Exceptions to this rule are described in the same Sub-Clause. With P&DB, the contractor is under less pressure, being allowed to notify the engineer of an error in the employer's requirements, with potential claims for an additional payment or extensions of time for completion.

According to Sub-Clause 1.1.1.5, 'Employer's Requirements' means the document entitled 'Employer's Requirements', as included in the contract. Any additions and/or modifications to such a document must be in accordance with the contract. The contract must specify the purpose, scope and/or design and technical criteria for the works. The employer's requirements shall specify the parts of the works to be designed by the contractor, and the criteria its design must meet. For example,

the dimensions, shape, technical specifications and standards. Particular methods of construction should not form a part of the employer's requirements. They should remain within the responsibilities of the contractor who shall then submit them, in compliance with Sub-Clause 8.3, as a part of its time schedule. The purpose of this procedure is to allow the engineer to have oversight of the construction processes and to minimize the possibility of their actions adversely affecting the intended purpose of the works.

Employers often use excessively detailed designs as part of the terms of reference, thus restricting the contractor's options to propose alternative solutions and sometimes better methods of realization, even though the design-build concept works best with less detailed Employer's Requirements. Nevertheless, it is vital for the Employer's Requirements to clearly define the standards of material, workmanship, aesthetic/functional requirements, performance and other criteria.

The Employer's Requirements constitute one of the most important documents to form part of the contract, and it is the responsibility of the employer to make sure the document is complete in all respects when the tender documents are sent out to bidders. In this document the employer gives their precise requirements for the completed works, including all matters in the various clauses of the contract which makes reference to the Employer's Requirements, and all matters which they wishes to include, even if not covered in the general conditions. In particular, the employer must clearly state the purpose of the works so that the contractor can ensure the works are 'fit for the purposes for which the works are intended' (FIDIC, 2011a).

12.7.3 Contractor's proposal

'*Contractor's Proposal*' means the document entitled 'Proposal', which the contractor submits with the Letter of Tender, as included in the contract (Sub-Clause 1.1.1.7 P&DB). Such a document may include the contractor's preliminary design. With EPC, the contractor's design is an expected part of the contractor's Letter of Tender. Stipulating the priority of the documents, Sub-Clause 1.5 requires the contractor's proposal be located behind the employer's requirements.

The purpose of the contractor's proposal is to provide the employer with a detailed description of how the contractor intends to perform the works in compliance with the contract and employer's requirements.

12.7.4 Drawings

Drawings constitute a fundamental part of the contract whenever CONS is used. According to Sub-Clause 1.1.1.6, '*Drawings*' mean the drawings of the works, as included in the contract and any additional and modified drawings issued or approved by (or on behalf of) the employer in accordance with the contract. As per Sub-Clause 1.9 of CONS, if the contractor suffers delay and/or incurs costs as a result of a failure of the engineer to issue the notified drawing or instruction within a reasonable time, the contractor may notify its claim for additional payment and/or extension of time for completion.

12.7.5 Bill of quantities and specifications

According to Sub-Clause 1.1.1.10, '*Bill of Quantities*' is the document so named (if any) located in the schedules. According to the *Dictionary of Construction Terms* (Tolson, 2012), the bill of quantities is:

> [A] written document which provides a detailed description of the quantity and quality of the works to be carried out on a project broken down into sections. They are typically prepared in accordance with an agreed standard method of measurement, and their principal purpose is to enable the contractor to prepare his tender sum. The contractor provides either a specific price for each item listed, or alternatively a rate for a quantity of work or materials.

The specifications are defined in Sub-Clause 1.1.1.5 of CONS as the document entitled '*Specifications*', as included in the contract, and any additions and modifications to the specification in accordance with the contract. Such a document specifies the works.

As per Sub-Clause 12.2 (b), the method of measurement shall be in accordance with the bill of quantities or other applicable schedules. To avoid disputes between the parties, it is recommended that the method used to prepare the bill of quantities is published. In the case of CONS, it is vital that the employer prepares the basic design for the tender. The specifications and bill of quantities should, therefore, allow the contractor to confidently offer a price covering the full scope of necessary works to be done.

When using CONS, the employer should be aware of the fact that the bid price (the accepted contract amount) will be modified to match changes in the amount of works necessary to be done (as under individual items of the bill of quantities) based on the certification and re-measurement made by the engineer.

12.8 Conditions of Contract for Construction (CONS) – 1999 Red Book

The Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer ('CONS'), or the 'Red Book' are the most frequently used of all the FIDIC forms. The abbreviation is a derivative of the word 'construction'.

Even today, previous versions of this book are still used in practice, for example, the fourth edition (1987) Red Book. This book is significantly out of date and its use is no longer recommended. The CONS were revised and re-published in 2005, 2006 and 2010. Practitioners may come across the 'CONS MDB' often referred to as the 'Pink Book'.

12.8.1 Structure of CONS

A contract agreement on its own is a very simple document and usually only deals with the price and content of the contractual relationship. Much of the detail is contained in attachments referred to in the contract agreement. The hierarchy in respect

of the legal weight and priority of these attachments are interpreted in accordance with Sub-Clause 1.5.

The documents forming the contract are to be taken as mutually explanatory of one another. For the purposes of interpretation, the priority of the documents shall be in accordance with the following sequence:

1. the Contract Agreement (if any)
2. the Letter of Acceptance
3. the Letter of Tender
4. the Particular Conditions
5. the General Conditions
6. the Specifications
7. the Drawings
8. the Schedules and any other documents forming part of the Contract.

If an ambiguity or discrepancy is found in the documents, the engineer shall issue any necessary clarifications or instructions.

In their general section, the CONS (the same as P&DB and EPC) make use of a clearly structured compilation of 20 chapters. These chapters are further broken down into Sub-Clauses. The first chapter contains general provisions and definitions. Chapters 2 – 5 define the participants and explain the status of the employer, the engineer, the contractor and the nominated subcontractors. Chapter 6 deals with the working conditions of the staff and labour in general (including labour law), health and safety. Chapter 7 addresses performance in respect of the plants and materials (including quality control); in Chapters 8 – 11, solutions for realization aspects are discussed, in particular those dealing with commencement, delays, suspensions of work, tests on completion, taking over of the works and defects liability issues. Contract price, variations and payment conditions are dealt with in Chapters 12 – 14. Chapters 15 and 16 deal with termination of the contract and suspension of works. Chapters 17 – 19 include key provisions regarding risk allocation in connection with insurance and *force majeure*. The last chapters deal with claims, disputes and arbitration when CONS include all necessary documents for the appointment of the Dispute Adjudication Board, including procedural rules.

The particular conditions contain guidance for their preparation, followed by sample documents such as a letter of tender, an appendix to tender, contract agreement, performance security and guarantees for advance payment and to remedy defects and an ADR clause (dispute adjudication agreement).

The contract agreement includes specifications and drawings where CONS is used.

Misapplications of FIDIC contracts in the United Arab Emirates by Kamal Adnan Malas (United Arab Emirates)

Over the past ten years, the United Arab Emirates have proven themselves internationally to be one of the most rapidly developing countries in the construction field. Large infrastructure projects and high rise buildings together with thousands of villas have been constructed to a high standard in a very short period.

In 2013, Dubai won its bid to host EXPO 2020 which will provide fresh fuel to the construction industry 'fire' in the UAE.

As there is not a unique, typical form of construction contract in the UAE, the engineers (i.e. Consulting Engineering Offices who have a licence and accreditation from the Municipality to perform engineering works) use various types of construction contracts (around 100 forms); including the FIDIC forms of contracts.

We have noticed in the past ten years that the FIDIC Red Book (1987 Edition) is the most used FIDIC form for construction works in the UAE. Some engineers use the FIDIC 1999 suit of contracts but the FIDIC 1987 Red Book still prevails.

Through our expertise in the State Courts as court-appointed experts and arbitrators, we noticed that the engineers were not applying FIDIC forms of contracts properly. There are misapplications of FIDIC contracts initiated by the engineer who prepares the tender and the contract conditions in a way to suit their needs, wants and control of the project. This minimizes contractor bargaining power and increases control by the engineer and the employer. For legal reasons, this is sometimes to their detriment. We will explain in the following text some major misapplications of the FIDIC 1987 Red Book that were encountered in the UAE:

- The Engineer cancelled the Priority of Documents (Clause no. 5.2): The FIDIC 1987 Red Book Clause 5.2 states that the priority of documents is as follows:
  1. The Contract Agreement (if completed)
  2. The Letter of Acceptance
  3. The Tender
  4. Part II of these Conditions
  5. Part I of these Conditions and
  6. Any other document forming part of the Contract.

The engineer deleted Clause 5.2 from the contract so that the priority of documents was not known. In case of discrepancies between the documents (which is common), disputes arise because of the different views of the engineer and the contractor. This ultimately leads to arbitration or litigation.

The results

The decision and positions of the arbitrators are hard to predict and may be contrary to the engineer's and the employer's because the arbitrators have the freedom to choose the priority of documents. This situation was created originally by the engineer's misunderstanding of the importance of stating the priority of documents and how this clause is applied under the law of the country where the construction is taking place. In the UAE, arbitrators are free to apply such priority of documents if they think it fits the case they are handling. They may use the original priority stated in the FIDIC General Conditions or they may apply their own priority if they, for example, consider the period which was granted to the tenderers to be too short to verify all tender documents and discover all discrepancies.

In another example, the engineer cancelled the maximum variation cap (Clause no. 51.1). In the FIDIC Red Book, the variation cap is 15% (positive or negative). The engineer deleted this cap provision, presuming that by cancelling the variation cap, he could order as much variation as he wants.

The consequences are often the opposite to his intention because, as per UAE law, the scope of work is fixed to what is agreed in the contract and the variation needs now to be negotiated with the contractor and the price has to be mutually agreed. This of course will delay the construction process especially if the engineer and the employer are slow in coming to an agreement.

The lack of a variation cap may also affect the employer contract termination. If the employer decides to terminate the contract at his convenience, he will pay the loss of profit to the contractor. The compensation for loss of profit in the UAE is 10% of the non-executed works. In the absence of a variation cap, the employer cannot deduct the totals of compensation for the negative variations from lost profit compensation. If there is a cap percentage for the variations, then the employer and the engineer will first of all order these negative variations (which are usually not more than 25% of the contract price), then they will terminate the contract. In this way they exercise their rights in ordering negative variations and by doing so, they save 2.5% of total contract price.

The taking-over certificate (Clause 48.3)

The contractor applied for a taking-over certificate, the engineer examined the works and issued the list of deficiencies to be corrected. After removing the deficiencies, the contractor applied for a Municipality Completion Certificate. The employer, the engineer, the contractor and the municipality's engineers signed the Municipality Completion Certificate which included a confirmation that construction works had been completed according to the specifications. The municipality engineers checked the project and determined that the works were acceptable for handing over and they issued the Municipality Completion Certificate.

The works were substantially completed; however, the engineer refused to sign the taking-over certificate (as required by the FIDIC contract) on the grounds that there were still some works to be finalized and issued another list of deficiencies.

After finalizing the requested works, the contractor activated the arbitration clause claiming prolongations costs due to engineer's obstructions which are in conflict with the contract.

The fact ignored by the engineer was that the refusal to issue the taking-over certificate did not grant the engineer the right to issue another list of deficiencies especially when he had already signed the Municipality Completion Certificate after the deficiencies in the first list had been corrected by the contractor. The engineer's presumption that the Municipality Completion Certificate had no value (because it was not mentioned in the FIDIC contract) was wrong. Moreover, it is usually accepted in arbitration or litigation that the contractor is entitled to be paid the prolongation costs after such obstructions caused by the engineer.

Another negative consequence for the employer is that equipment guarantees last only for a period of 18 months from the date of purchase so that prolongation may lead to expiry of these guarantees before the equipment is even used.

Partial taking-over certificate (Clause 48.3)

Clause 48.3 of FIDIC Red Book (1987 Edition) states:

> If any part of the permanent works has been substantially completed and has satisfactorily passed any tests on completion prescribed by the contract, the engineer may issue a taking-over certificate in respect of that part of the permanent works

> before completion of the whole of the Works and, upon the issue of such certificate, the contractor shall be deemed to have undertaken to complete with due expedition any outstanding work in that part of the permanent works during the defects liability period.

To explain the misapplication of this clause, let us assume that we have a project consisting of an 80-floor building. At the contractor's request, the engineer issued a taking-over certificate for the first 40 floors which included 400 apartments, without taking over the lifts because the lifts were not completed and they were to be used by the inhabitants of the whole building not only by those living on the first 40 floors. This is a misapplication of Clause 48.3 because the employer cannot benefit from the use of the first 40 floors due to non-operating lifts. The engineer actually put the employer and the contractor in a dilemma when the delay penalties were calculated. The contractor argued that the 40 floors be handed over in time so that the respective delay penalty might be deducted from the total amount of delay penalties on a pro-rata basis. The employer claimed that he could not benefit from the use of the first 40 floors because the lifts were not completed and the tenants could not use their apartments. In the end, because no beneficial use was provided, penalties were imposed without any deductions.

Termination of the contract (Clauses 63.1-63.4)

If a project is performed in the UAE and it is governed by UAE Law (Article 267 of UAE Civil Law no. 5/1985 and its amendments), it cannot be terminated by the unilateral will of any party, except if it is expressly allowed by law.

Furthermore, the Dubai Supreme Court issued a ruling allowing unilateral termination of the construction contract by the employer on the basis that the employer will pay the contractor for costs of work done and also compensate the contractor for all loss of profit for the non-executed works.

In practice, however, we are seeing that many engineers are applying the related Clause of FIDIC contracts with the presumption that they (employer and engineer) have the right to terminate the contract without any consequences. They simply send a termination letter to the contractor requesting handing over of the work to the employer and order the contractor to leave all equipment on site until completion of the project by the employer to make the exact, final statement of account between the employer and contractor.

This mere misapplication and misunderstanding of a FIDIC contract will lead to damages claims against the employer. Under UAE Law (Article 879 of the UAE Civil Law no. 5/1985 and its amendments), the contractor is entitled to refuse to hand over the works to the employer if the employer has not paid the contractor's dues. In practice, the contractor will (after receiving the termination letter) conserve the suspended works, 'close the entrance' and request the employer to pay the dues. This is of course not mentioned in the original FIDIC contract and the inexperienced employer will circulate the termination letter through his inexperienced engineer without knowing the real consequences which will take place.

Delayed decisions about contractor claims

The engineer refused to decide about the contractor's claims in reasonable time during the construction period by leaving the decisions to the end of the project. The results are: the contractor

is entitled to an extension of time due to non-payment of the contractor's claims in reasonable time. This is because of the specific regulation of UAE governing law (Article 247 of UAE Civil Law no. 5/1985 and its amendments). The contractor is also entitled to compensation for the engineer's delay in replying to contractor claims.

Modification of the arbitration clause

The engineer, in an attempt to gain more control, drafted the arbitration clause to read as follows:

> The engineer is the arbitrator and its decisions are binding on both parties.

The above-mentioned clause shows the misapplication of Clause 67 of the FIDIC Red Book (1987 Edition). The engineer is not eligible to be the arbitrator as per UAE law because he is the employer's representative on site (in the UAE the engineer is considered to be the employer's representative on site and, at the same time, (as per UAE law) the arbitrator must be impartial and independent, i.e. the engineer cannot be an arbitrator). The above provision is not an arbitration clause and is in fact a specific adjudication point regarding the engineer's determination. However, as per UAE law, the dispute must still be submitted to the engineer in such an arrangement before starting any arbitration proceedings because the above-mentioned engineer's determination is considered as a condition precedent (this step is considered a mandatory condition which must be applied before recourse to arbitration, similarly to the mandatory amicable settlement attempt under the FIDIC forms).

Two examples of badly drafted arbitration clauses follow:

> In the case of any dispute arising in application of this construction contract, the parties will revert to arbitration and then to the state courts to resolve their disputes.

> All Disputes shall be resolved through arbitration or state courts.

The above-mentioned clauses are not only a misapplication but are also misleading because one of the parties may revert to state courts, and the other to arbitration to resolve the dispute. This will significantly complicate the dispute resolution procedure.

Deleting the DAB section from FIDIC 1999 suite of contracts

In many cases we noticed that the engineer deleted the DAB section from the wording of FIDIC Red Book (1999 Edition) in order to keep more power during the construction period. The implementation of DAB in the 1999 First Edition of FIDIC forms proved to be effective in reducing disputes and the above-described modification of FIDIC principles is considered a significant misapplication of the FIDIC Red Book (1999 Edition).

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12.9 Conditions of Contract for Plant and Design-Build (P&DB) – 1999 Yellow Book

The full name of these conditions is *Conditions of Contract for Construction Plant and Design-Build for Electrical and Mechanical Works and for Building and Engineering Works Designed by the Contractor* (P&DB).

Like CONS, the use of previous versions of the P&DB form, such as the Third Edition (1987), can still be found. As the Third Edition is out of date, its use is not recommended.

12.9.1 Structure of P&DB

As with the CONS, the contract agreement only confirms the price and content of the contractual relationship. Being a simple document in itself, much of the detail is contained in attachments referred to in the contract. The hierarchy in respect of the legal weight and priority of these attachments is interpreted in accordance with Sub-Clause 1.5 as follows:

(a) the Contract Agreement (if any)
(b) the Letter of Acceptance
(c) the Letter of Tender
(d) the Particular Conditions
(e) the General Conditions
(f) the Employer's Requirements
(g) the Schedules
(h) the Contractor's Proposal and any other documents forming part of the Contract.

The structure of the general part of P&DB is identical to CONS but differs in two chapters. The main difference is that the contractor provides the design and the total price of the work is not measured but structured as a lump sum. As such, Chapter 5 does not deal with nominated subcontractors as in the case of CONS, but with the design issues. In other words, with the contractor's obligations in respect of the design, including the design errors which shall be at the contractor's expense as per Sub-Clause 5.8 of P&DB. Chapter 12, which deals with measurement and evaluation in CONS, is omitted and replaced with a chapter which describes the tests after completion.

P&DB also contain all the necessary documents for appointment of the Dispute Adjudication Board and include the procedural rules.

The particular conditions give guidance for their preparation. In the final section, there are sample forms of the letter of tender, contract agreement, performance security, guarantee for advance payment and guarantee for remedying of defects.

Whenever P&DB is used (because the design is provided by the contractor), the contract agreement will, therefore, include the employer's requirements and contractor's proposal in its attachments.

12.10 Conditions of Contract for EPC/Turnkey Projects (EPC) – 1999 Silver Book

EPC is recommended for all-inclusive delivery, for example, power plants, factories or other similar facilities where a higher degree of certainty is required for final price and time for completion. The contractor takes full responsibility for the design and performance of the works.

A common feature of contracts of this type is that the contractor provides all designing and engineering, procurement of subcontractors and deliveries, performance of the works and handing over of a complete and ready to operate facility. Unlike other FIDIC books, the EPC form allocates more risk to the contractor. Hence, some problems may be encountered from a legal standpoint if this form is used in countries with European systems of law.

12.10.1 Structure of EPC

As with CONS and P&DB, the contract agreement alone only specifies the price and content of the contractual relationship. Being a simple document in itself, much of the detail is contained in attachments referred to in the contract. The hierarchy in respect of the legal weight and priority of these attachments is interpreted in accordance with Sub-Clause 1.5 as follows:

(a) the Contract Agreement
(b) the Particular Conditions
(c) the General Conditions
(d) the Employer's Requirements
(e) the Tender and any other documents forming part of the contract.

The structure of the general part of EPC is again identical to CONS (P&DB), but differs from CONS in three chapters. Like P&DB, the contractor provides the design and the contract price is determined as a lump sum. As with P&DB, Chapter 5 does not deal with nominated subcontractors but does deal with design issues. Chapter 12 (Measurement and Evaluation) is again replaced with a chapter which outlines 'after completion tests'.

The differences between CONS and P&DB can also be found also in Chapter 3. In particular, EPC no longer refers to the role of engineer but to an 'employer's representative' as contract administrator.

EPC also includes all the necessary documents for the appointment of the Dispute Adjudication Board as well as the procedural rules.

As with CONS and P&DB, the particular conditions include guidance for their preparation. In the last section, there are sample forms of a letter of tender, the contract agreement, performance security, guarantees for advance payments and guarantees for remedying defects.

An EPC contract agreement will include the employer's requirements and the contractor's proposal as its attachments.

12.11 Short Form of Contract – Green Book

The use of a *short form of contract* (the 'Green Book') is anticipated in construction works with a relatively small capital value. Depending on the type of work and circumstances, this form may also be appropriate for relatively simple or repeated work of a short duration.

12.11.1 Structure of Short Form of Contract

This form came from CONS, but establishes a much shorter document. Considerably simplified chapters constitute only a basic contract framework for less demanding projects.

12.12 Construction Subcontract

In 2010, FIDIC published its *Conditions of Subcontract for Construction* (the 'Construction Subcontract'). The use of a construction subcontract can usually be expected where the relationship between the main contractor and employer (the main contract) is based on CONS. This form of construction subcontract works on the principle of transferring most contractor risk to the subcontractor (back to back). Some contract provisions typically encountered in subcontracts originate from civil law jurisdictions. These provisions, however, are not widely used in the common law countries. Take, for example, Sub-Clause 14.6. According to this Sub-Clause, a contractor may withhold payment from a subcontractor if they (the contractor) have not been duly paid by the employer (pay when paid). Many rights and obligations of sub-contracting parties are copied from the main contract, such as the contractor's right to terminate the contract. Others undergo a natural adaptation, such as the subcontractor's obligation to notify its claim for additional payment or extensions of time for completion. In accordance with Chapter 20, this is a shortened period of 21 days. Submission of claim quantifications must be made within 35 days.

12.12.1 Structure of Construction Subcontract

A subcontract agreement typically only confirms the price and content of the contractual relationship as expressed in the *Main Contract*, referring to the documents that constitute the contract with a structure as follows:

(a) Contractor's letter of acceptance
(b) Letter of Subcontractor's offer
(c) Particular conditions of subcontract
(d) General conditions of subcontract
(e) Subcontract specification

(f) Subcontract drawings
(g) Subcontract bill of quantities and other schedules of rates and prices in the Subcontract
(h) Other annexes to Subcontract.

In its general part, the Construction Subcontract follows the pattern of 20 chapters broken down into Sub-Clauses. The first chapter contains general definitions and explanations. Chapter 2 describes the main contract. Chapters 3 – 5 define the parties, i.e. the roles of the contractor and of the subcontractor. As in CONS, Chapter 6 deals with the working conditions of technical staff and labour in general; including labour law aspects, health and safety. Chapter 7 addresses the details in relation to plants and materials (including quality control). In Chapters 8 – 11, problems and suggested solutions involving realization aspects are covered, for example, commencement, delay and suspension of works, tests on completion, taking-over of the subcontract works and defects liability. Chapters 12 – 14 deal with subcontract price, variation of subcontract works and payment conditions. Chapters 15 and 16 specify termination of subcontract and suspension of works. Chapters 17 – 19 contain base provisions concerning risk allocation in connection with insurance and *force majeure*. The last section deals with claims and subcontract dispute resolution.

The particular conditions also contain guidance for their preparation, followed by the related annexes, i.e. the documents called Particulars of the Main Contract; Scope of Subcontract Work and Schedule of Subcontract Documents; Incentive(s) for Early Completion, Taking-Over by the Contractor and Subcontract Bill of Quantities. Further, there are the documents; 'Equipment', 'Temporary Works, Facilities and Free-Issue Materials to Be Provided by the Contractor,' 'Insurances,' and the document 'Subcontract Programme'. Further, there are sample forms of the Letter of Subcontractor's Offer, Appendices to Subcontractor's Offer, Contractor's Letter of Acceptance and Subcontract Agreement.

12.13 Conditions of Contract for Design, Build and Operate (DBO) – Gold Book

The ever-growing need for a document was identified where the contractor would be: (1) responsible not only for the design and realization of the works itself; but also (2) bound to operate the resulting works for a certain period of time after the above-described edition of FIDIC forms (1999) had been published. FIDIC realized that there were various alternatives, but determined in favour of the so-called 'greenfield scenario', i.e. where there is a brand new construction to be performed. FIDIC have, therefore, prepared the *Conditions of Contract for Design, Build and Operate* projects. This form it not suitable for 'brownfield scenario' projects, i.e. reconstruction of an existing works (facility) known as *Operate-Design-Build* (ODB).

According to FIDIC, the DBO is typically intended for construction projects in the field of transport and engineering infrastructures where the resulting works will bring a turnover and profit to the employer and where the employer has neither the human resources nor the experience to be able to operate the works on its own and would have to look to hire an external operator.

Feasibility studies in respect of environmental impacts and economic benefits shall be provided by the employer, as well as land, financing, planning permission and construction permits.

As foreseen by DBO, the contract should be awarded to one contractor only, as one coordinator can then ideally coordinate preparation of the design, realization of the works, quality control, and innovation within the operation period. The contractor shall therefore be responsible for:

1. Design (i.e. for providing the design documents).
2. Build (i.e. realization of construction works).
3. Operate and Maintain (i.e. operation service and maintenance of the works).

The DBO sample form presumes that the contractor will operate the works for 20 years. Ownership to the works shall pass to the employer at the start of commissioning. During the operation period, the contractor will operate and maintain the works on the basis of a licence. The main advantage of this approach is that the contractor is more motivated to design and build the works in accordance with short-term and long-term goals.

This particular part is of extraordinary significance whenever the FIDIC DBO form is used. Specifics of the works operation period cannot be unified too much, and the individual requirements of those involved in a respective project (such as a PPP project) can always be encountered.

In 2011, FIDIC prepared the *DBO Contract Guide*, which must be consulted whenever the particular conditions are put together. The particular conditions newly include two sections which provide enough space for defining the specifics for the works operation service period.

12.13.1 Structure of DBO

A DBO contract agreement confirms only the price and content of the contractual relationship. It is, as usual, a very simple document that refers to the attachments which constitute the contract in the hierarchy with respect to their legal weight in accordance with Sub-Clause 1.5:

(a) the Contract Agreement (if any)
(b) the Letter of Acceptance
(c) the Letter of Tender
(d) the Particular Conditions Part A – Contract Data
(e) the Particular Conditions Part B – Special Provisions
(f) the General Conditions
(g) the Employer's Requirements
(h) the Schedules
(i) the Contractor's Proposal and any other documents forming part of the Contract.

FIDIC DBO is based on FIDIC P&DB, being in fact its updated wording (FIDIC P&DB is nine years older than FIDIC DBO), with the operation service period added

and necessary modifications made to accommodate the specifics of a long-term relationship. DBO is the most advanced FIDIC form nowadays. Many useful adjustments were incorporated and this form will also be the base for the further updates of FIDIC forms.

The DBO form uses employer's representative instead of the engineer. In the part describing time for completion, Chapter 8 underwent natural modifications to allow for the operation period. Chapter 9 deals with designs coming from P&DB. Chapter 10 newly handles the operation service period. In its part on payment conditions, Chapter 14 is set to reflect both the payments for performance of design and construction works and financing within the operation period. The same applies concerning the issues of contract termination in Chapters 15 and 16. Risks are described in Chapter 17 as allocated not only to the employer in particular, but to the contractor as well. Newly described in Chapter 18 are the 'exceptional risks' (instead of *force majeure*). In the period of operation service, the Dispute Adjudication Board is foreseen as an ad hoc committee.

The main structural difference between FIDIC DBO and the forms in the 1999 First Edition is the fact that FIDIC DBO contains, at its beginning, illustrative charts that describe important procedures to be applied within this type of contract. Their purpose is to facilitate working with the contract and accelerate understanding of the basic principles, such as:

- The overall contract period;
- The design-build period;
- Commencement of design-build commissioning;
- Operation service period;
- Payment during the design-build period;
- Payment during the operation service period;
- Determination by employer's representative;
- Contractor's claims – submission;
- Contractor's claims – determination;
- Settlement of disputes.

Other differences in form include an alphabetically ordered list of definitions, updated provisions regarding risk allocation, insurance, claims, as well as a greater number of sample documents in the annexes. This clearer designation of risks and claims will facilitate the avoidance of disputes.

Key material differences between FIDIC P&DB and DBO are that DBO include a 20-year operation service period and further, for example, a facility refurbishment fund to cover the costs for replacement of worn parts of the facility while it is operated. Surplus funds, if any, will be equally distributed to the parties. Lack of funds is a contractor risk.

Other necessary extensions beyond the scope of FIDIC P&DB are that the employer may retain 5% of payments if the contractor fails to uphold its obligation to maintain the works. Furthermore, an independent supervisor is nominated to monitor how the contractual obligations are performed. The parties are then obliged to obey the supervisor's opinions. In addition, the Dispute Adjudication Board is appointed and replaced every five years.

12.14 Other FIDIC standard forms

For completeness, a brief overview of some previous versions of FIDIC forms (the 'old series', i.e. the versions preceding the First Edition 1999) is included:

(a) *Conditions of Contract for Works of Civil Engineering Construction with forms of Tender and Agreement* – 'The Red Book', Fourth Edition, 1987, reprint 1992.
(b) *Supplement to the Fourth Edition 1987 of the FIDIC Conditions of Contract for Works of Civil Engineering Construction* – 'The Red Book', First Edition, 1996.
(c) *Conditions of Contract for Electrical & Mechanical Works/including erection on site/with forms of Tender and Agreement* – 'The Yellow Book', Third Edition, 1987, reprint 1988.
(d) *Supplement to the third edition 1987 of the Conditions of Contract for Electrical & Mechanical Works* – 'The Yellow Book', First Edition, 1997.
(e) *Conditions of Subcontract for Works of Civil Engineering Construction*, First Edition, 1994.
(f) *Conditions of Contract for Design-Build and Turnkey* – 'The Orange Book', First Edition, 1995.

The following are from the 'New Series' (besides CONS, P&DB, EPC, Short form and DBO):

(a) *Client/Consultant Model Services Agreement*, Third Edition, 1998 – 'The White Book'. A sample form of a professional service agreement, such as for the preparation of a design or to provide other services (technical assistance, supervision, and so on). This document is supplemented by two other documents: (1) a consultant/sub-consultant model contract; and (2) a joint venture sample contract for design works or provision of services.
(b) Client/Consultant Model Services Agreement, Fourth Edition, 2006, as an updated version with partial modifications.

Worth mentioning is also a standard form of contract intended for the use in the mining industry, the so called 'Blue Book'. The most recent form is the Model Representative Agreement in the First Edition, 2013 (the 'Purple Book').

Even the oldest versions of the FIDIC forms provide solid guidance but FIDIC does not recommend their use as they have been superseded by newer editions. The Federation cannot forbid or restrict their use but it is self-evident that the development of the individual books must reflect development in the economy, the construction industry in general, law and management, dispute resolution and all other related aspects.

Use of FIDIC contracts by the mining industry in Africa by Coenraad Snyman (South Africa)

Many gold, copper, coal, platinum and diamond mines are situated on the African continent. Invariably, these mines are often located in isolated regions and often, also, in developing

countries. This poses unique challenges, ranging from very poor infrastructure (hindering the delivery of goods and materials to the site – including the ability of employers to deliver free-issue materials in time), delays at borders and by authorities (ranging from custom officials who have to clear goods to be imported into the country, environmental agencies who have to issue permits, etc.), corrupt practices, illiteracy, uneducated and inexperienced contractors and sub-contractors. Not only is the mining industry inherently a risky one, it is exceptionally so in Africa.

Using form contracts, such as FIDIC, has many advantages since it increases the odds of mining houses and contractors being familiar with the contractual terms and hence also with the manner in which risk and responsibilities are allocated, shared or distributed. FIDIC contracts are, however, often being amended substantially and this has proven to be problematic. Typical changes and amendments which have been made to FIDIC contracts include changing the 1999 'Yellow Book' into a re-measurable contract and changing the 1999 'Red Book' into a lump-sum contract.

The contract entered into by a major gold producer for the refurbishment of their gold processing plant situated in Ghana, was let on such a basis. The contractor, in that case, not only determined its own scope (by deciding what parts or components of the plant needed replacement) but also took responsibility for any designs that might be required in order for them to do the work. Because the volume of the work was largely unknown at the tender stage, a 'Yellow Book' contract was entered into but on a re-measurable basis. The employer assumed the role of engineer himself.

Mining houses typically employ engineering houses to carry out the design of processing and water treatment plants or tailing dams, for example, and this is often done during the feasibility study phase of the project. Tenders for the construction of the works are thus being sought based on the employer's design. The 1999 FIDIC Red Book, which is drafted for works designed by the employer, would be the logical choice of contract. Many employers, however, prefer to obtain a lump-sum offer and price for doing such work, hence the need to amend the Red Book's payment provisions. This is, however, not just a simple and straightforward matter which can be accomplished by merely swopping the payment provisions found in the Yellow Book with those found in the Red Book.

In the case of major plant upgrades, EPCM contracts, using the FIDIC White Book, are often entered into in order to appoint a contractor to carry out the pre-feasibility, feasibility studies and designs. This happened, for example, in connection with the project involving the upgrade of a gold processing plant situated in Mali. A redesign and upgrade of the plant became necessary due to the fact that the nature of ore changed tremendously (in hardness, etc.) once it was extracted from deeper levels and from different pits. The intention was that the contractor would, in that case, also manage the project's execution once the construction phase started.

A US$60 million contract for the construction of a greenfield copper processing plant situated in the DRC (Democratic Republic of Congo) was let on the basis of a 1999 FIDIC Silver Book. Interestingly, although the Silver Book was used in that instance, the Contractor did not carry out nor was it responsible for the design of the work.

An important part of mining activities do, by their very nature, happen underground. Such work typically involves and includes 'building' or sinking ventilation and access shafts, stopes, underground workshops, facilities for working crews, backfilling, etc. In the case of open-pit mines, 'contract mining' contracts are generally entered into with third parties since few mining

houses have the capacity (on interest, perhaps) to so such work themselves. These contracts are normally bespoke.

Any important part of the contractor's obligation (both in the case of underground as well as open pit mining operations) is to extract, to haul to the surface and/or to the 'run of mine' or ROM pad sufficient ore so that employer's mineral processing activities can continue uninterrupted and at a predetermined and steady rate. This obligation to extract sufficient quantities of ore is an important and cardinal one which is far removed from the type of obligations encountered in traditional or typical building and engineering contracts.

Where (and to some extent also 'when') the work will happen depend upon a succession of mining plans produced by the employer. The ability and extent to which contractors involved with mining work can, therefore, programme, schedule and plan their work are subject to constant and frequent change.

Unlike the case which may exist in the case of 'pure' building contracts' these changes are not treated as variations entitling the contract to submit a claim for addition costs or for additional time within which to complete the work. Changes such as these are the 'norm' rather than the 'exception'. Standard FIDIC provisions dealing with variations and the consequence thereof will simply not do or suffice.

Due to the ongoing and constant changing nature of this work, it is also difficult (if not near impossible) to set and to specify specific completion dates by when the work (or a section thereof) must be complete and hence it is equally difficult to apply delay damages.

Although FIDIC contracts are frequently used by the mining industry, their use is often limited to building work that must be carried out 'above ground' whereas what happens below-ground or in the mining pit is invariably the subject matter of bespoke contracts which bears little or no resemblance to FIDIC contract forms.

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12.15 Risk allocation under FIDIC forms

FIDIC forms build on sophisticated inter-connections between the individual Sub-Clauses – particularly in risk allocation, claims and dispute resolution. In the following text, attention will be paid to risk allocation according to the 1999 First Edition FIDIC forms and differences between these particular sample forms, i.e. CONS, P&DB and EPC.

12.15.1 Risk allocation in CONS

Employer's risks

General provisions for risk allocation are contained in Chapter 17 of CONS, P&DB and EPC. However, a risk allocation systematic has to be perceived in the context of

a contract as a whole. Sub-Clause 17.6 provides an important provision concerning the limitation of liability. As a general rule, total mutual liability of the contractor shall not exceed the accepted contract amount as per Sub-Clause 1.1.4.1.

Contractual risk allocation has to be viewed in respect to the limits stated by the governing law in conjunction with Chapter 19 (provides a contractual definition of *force majeure*), and together with Chapter 18 (defines insurance-risk transfer). Risk allocation is interconnected with claims (as per Sub-Clauses 2.5 and 20.1 in general) and with the system of employer and contractor rights and obligations: Chapters 2 and 4.

According to CONS, the employer shall bear mainly the risks from the hazards under Sub-Clause 17.3:

(a) war, hostilities (whether a war be declared or not), invasion, acts of foreign enemies;
(b) rebellion, terrorism, revolution, insurrection, military or usurped power, or civil war within the country;
(c) riots, commotion or disorder within the country by persons other than the contractor's personnel and other employees of the contractor and subcontractors;
(d) munitions of war, explosive materials, ionizing radiation or contamination by radioactivity, (within the country), except as may be attributable to the contractor's use of such munitions, explosives or radioactive material.

These risks are defined in Sub-Clause 19.1 as '*force majeure*' events. Further risks referred to in Sub-Clause 17.3 are:

(e) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds;
(f) use or occupation by the employer of any part of the Permanent Works, except as may be specified in the contract;
(g) design of any part of the works by the employer's personnel or by others for whom the employer is responsible; and
(h) any operation of the forces of nature which is unforeseeable or against which an experienced contractor could not reasonably have been expected to have taken adequate preventative precautions.

The employer shall bear further risks in connection with its obligation to obtain permission from public authorities, i.e. as per Sub-Clause 1.13, permission in connection with public-law zoning and planning processes and construction permissions for the permanent works. The employer is further to provide the contractor with site access rights as per Sub-Clause 2.1. A separate category of employer's risks consist of unforeseeable physical conditions as per Sub-Clause 4.12 (in respect of Sub-Clause 4.10). The definition of 'unforeseeable' is available in Sub-Clause 1.1.6.8 and states that 'unforeseeable' means not reasonably foreseeable by an experienced contractor at the date for submission of the tender. Evaluation of unforeseeable natural events in a particular situation must be done in respect of the contract time for completion and frequency of occurrences of this particular situation according to historical records. The following example is published in the FIDIC Contracts

Guide (2000, p. 274): If time for completion is three years, an experienced contractor should reasonably foresee an event occurring once in every six years but not an event occurring once in 10 years, which would be considered unforeseeable.

Employer's risk may also be costs incurred in connection with archaeological findings (as per Sub-Clause 4.24). Due to the inter-connections with contractual claims, the employer's risks from Sub-Clause 8.4 are also worth mentioning. They are, in fact, the time-related impacts of variations to the works, of contractual claims, of exceptionally adverse climatic conditions, of shortages in availability of personnel (such as epidemics) and time-related impacts of any delay, impediment or prevention caused by, or attributable to, the employer (including the engineer).

As per Sub-Clause 8.5, the employer shall bear the risks of delays caused by public authorities, bearing also, pursuant to Sub-Clause 13.7, the risks of adjustments for changes in legislation and, pursuant to Sub-Clause 19, also the risks of '*force majeure*'. Where a contract contains a provision about cost adjustments, the related risks shall be borne by both parties, depending on the particular setting. According to the standard setting, total price of the works can either increase or decrease.

Furthermore, according to Sub-Clause 17.1, the employer shall indemnify the contractor against all claims, damages, losses and expenses in respect of bodily injury, sickness, disease or death attributable to any negligence, wilful act or breach of contract by the employer – including liabilities excluded from insurance cover.

Other employer risks mainly arise from contractual or other claims of the contractor. The employer shall regularly bear some of the risks that arise from their contractual obligations and the governing law. For example, risks from the employer's obligation to pay the contract price, general duty of prevention, the duty to cooperate, and so on.

Contractor's risks

The general Sub-Clause 17.1 further describes (as contractor risks) those risks that relate to a potential bodily injury, sickness, disease or death arising out of the contractor's works (or by reason of the contractor's design) and the risks from breaching of the contractor's contractual obligations in general. According to Sub-Clause 17.2, the contractor shall take full responsibility for the care of the works and goods until the taking-over certificate is issued. At this point, responsibility for the care of the works shall pass to the employer. If any loss or damage happens to the works, during the period when the contractor is responsible for their care (from any cause not being employer's risks), the contractor shall rectify the loss or damage at the contractor's risk and expense.

According to Sub-Clause 4.1, the contractor shall mainly bear the risks of executing and completing the works in accordance with the contract. This implies the duty of due (including timely performance), see Sub-Clauses 1.13 (b), 4.9, 7.1, 8.2, 8.7, 9.1; remedying defects during realization and defects notification period (see Sub-Clauses 7.6, 11.1), for adequacy, stability and safety of all the site operations and of all methods of construction (see mainly Sub-Clauses 4.6, 4.7, 4.8, 4.18, 6.7, 6.9, 6.11). Where the contractor is designing a part of the works, the contractor shall bear the related risks (see also Sub-Clauses 4.1 and 17.5).

Sub-Clause 4.10 states that, to the extent practicable (and taking into account cost and time), the contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the tender or works. To the same extent, the contractor shall be deemed to have: (1) inspected and examined the site and its surroundings; (2) inspected and examined the site data; (3) considered other available information; and (4) to have been satisfied before submitting the tender as to all relevant matters, including (but without limitation to):

(a) site characteristics including sub-surface conditions
(b) hydrological and climatic conditions
(c) extent and nature of the work and goods necessary for the execution and completion of the works and remedying of any defects
(d) laws, procedures and labour practices of the country; and
(e) contractor requirements for access (as per Sub-Clauses 4.13 and 4.15), accommodation, facilities, personnel, power, transport, water and other services.

As per Sub-Clause 4.11, the contractor shall bear the risk of insufficiency of the accepted bid price; in accordance with Sub-Clause 4.19 it is the risk of failure to provide all power, water, and other required services; and, in accordance with Sub-Clause 4.22, the risk of security of the site (see Sub-Clause 4.23).

Other risks come mainly from contractual or other claims of the employer. The contractor will also bear some other risks that come from the governing law and general duties of prevention, the obligation to cooperate, statutory liabilities and warranties and so on.

For the latest developments of FIDIC risk allocation, see Chapter 14.

China's Standard form of construction contract in comparison with FIDIC forms by Shuibo Zhang (China)

Global construction is and will be the trend. Although the FIDIC New Red Book (CONS/1999 Red Book) is a contract for an international setting and the *China's Standard Form* is meant for a domestic setting, they are basically similar in nature. Both (1) are prepared by a somewhat neutral contract committee; (2) have the role of 'engineer' who acts fairly for contract administration; and (3) are intended for 'construction' with only little or no design responsibility on the part of the contractor. As a matter of fact, the New Red Book is not a 'pure' international form because, with some or even minor modifications, it can also be used in domestic contracts. Thus, such similarities merit a comparison between these two forms, particularly in terms of risk allocation.

The first edition of *China's Standard Form of Construction Contract* (GF-91-0201), ('China's Standard Contract') was published in 1991 and is used for construction projects nationwide.

In the past ten years, the Chinese construction industry has been developing very quickly. Some fundamental construction laws, such as the Building Law, the Tendering Law and the Contract Law, have been laid down to regulate the construction industry in recent years. The change and development of the Chinese construction industry made it necessary to modify the first edition of the model contract. In 1999, the second edition of China's Standard Contract

was prepared by a contract committee which consisted mostly of consultants and government officials who held a neutral position among employers, contractors, consultants and scholars. It was published jointly by the Ministry of Construction of China, in conjunction with the China State Administration for Industry and Commerce, to supersede the first edition with reference to standard contract forms, including the FIDIC forms. Similar to the New Red Book, China's standard contract consists of three parts: Contract Agreement, General Conditions and Particular Conditions.

Compared with the FIDIC form, China's standard contract is rather short and concise. This characteristic is also reflected in its risk allocation clauses. Some risks dealt with in the FIDIC form are even left unmentioned. The following is a brief summary of risk allocation in China's Standard Contract.

- *Natural risks*: Climatic risk events are not dealt with explicitly in China's Standard Contract; however, under Sub-Clause 13.1 and Clause 39 (*force majeure*), the Contractor shall be granted an EOT if some natural catastrophes such as avalanches, floods and typhoons occur that impact project progress.
- *Force majeure* events may also include strong wind, heavy rain and snow if agreed by both parties in the particular conditions of contract under some circumstances. Sub-Clause 39.1 expressly states the definition of *force majeure* for construction contracts under the Chinese legal system. Other catastrophes are also covered under Sub-Clause 13.1, such as earthquakes and volcanic activities. Regarding geological conditions, the employer shall provide geological data and existing sub-surface piping systems data of the construction site and shall be responsible for the accuracy of such data. If, due to the inaccuracy of such data, the contractor incurs additional costs and/or suffers delay, the employer shall compensate and grant an EOT accordingly (Sub-Clauses 8.1 and 8.3).
- *Political and social risks*: These risks are dealt with very much less directly. In the case of occurrence, several clauses can be applied. Sub-Clause 1.22 Definition of *force majeure* and Clause 13 (Schedule Delay) covers some political risk events, such as war, riots, etc., in which case the contractor shall be allowed an appropriate EOT and share the relevant costs with the employer. Social risk events are covered under Clause 9, which requires the contractor to be responsible for site security by providing lighting and fencing to prevent possible theft and vandalism (Sub-Clause 9.1).
- *Economic and legal risks*: Sub-Clause 23.2 specifically deals with these risks. It is provided that the contract price can be adjusted when it is impacted by the following circumstances:
  - changes in law;
  - changes in administrative regulation;
  - changes in government policies;
  - changes in price indices published by construction cost authorities.

  It can be seen from such a provision that the employer shall, in general, bear the risk of price fluctuation. No mention is made of the shortage of equipment, materials and labour in China's standard contract. This may be due to the thinking style of the Chinese construction culture, that in the domestic market, such a shortage is unlikely to occur. All these should be available in the current Chinese construction market. It is just a matter of price fluctuation to procure these supplies. Introduction of such a 'shortage' concept into the contract may lead to complications and confusion.

Behavioural risks

1. *Employer Behavioural Risks (including the engineer's)* are mainly the following:
   - late or incorrect instructions from the engineer on behalf of employer (Sub-Clauses 6.2, 6.3, 16.4);
   - employer-or third party-caused emergent remedy (Sub-Clause 7.3);
   - land requisition (Sub-Clause 8.1);
   - late (or failure to provide) drawings or meet commencement requirements as agreed (Sub-Clause 13.1);
   - late payment (Sub-Clauses 13.1, 24, 26.4);
   - failure to provide instruction or approval (Sub-Clause 13.1);
   - disturbance of contractor's normal working on site (16.3);
   - interference with inspection for acceptance or taking over (Sub-Clauses 17.2, 32).
2. *Contractor behavioural risks* are mainly the following:
   - contractor-caused accidents and casualties (Sub-Clause 22.1); Improper interference of the public (Sub-Clause 9.1);
   - acts or defaults by subcontractors (Sub-Clause 38.3);
   - environmental protection (Sub-Clause 9.1);
   - quality defects (Sub-Clause 15.1).
3. *Risks caused by third party's behaviour* are mainly the following:
   - suspension of delivery of water, electric power and gas by utilities authorities (Sub-Clause 8.5);
   - under China's standard contract, the employer is responsible for both his and the third party's risks as listed above, while the contractor is responsible for his own.

Although the risk allocations are not totally the same under the two construction contracts, they are, for the most part, consistent with the best practice risk allocation principle concerning the behavioural risks. For example, the employer and the contractor are responsible for their respective behavioural risks. This echoes the principle that each party shall be responsible for their misconduct or lack of care; however, under both the FIDIC form and China's standard contract, the employer is responsible for a risk caused by Authorities. This may be due to the fact that it is impracticable, if not impossible, for the contractor to insure against such an 'unforeseen' event. In an international setting where the FIDIC form is intended for use, the employer (which in some cases, is the local government or related entity), is more efficient in coordinating with such third party's interfering behaviour. As for China's standard contract which is for domestic use, the purpose of the provision may be due to the 'Chinese construction culture'. This means that the employer, as a traditional practice, provides water, power and access road for the contractor to commence the site work as part of the employer's contractual obligation as stated by Clause 8 – work of the employer – in China's standard contract. Thus, it seems logical for the employer to be responsible for the shut-off of water and power supply for a continuous period of time. Concerning natural risks, both the FIDIC form and China's standard contract advocate the sharing of the risk but the specific division principle is different to some extent. For example, under the FIDIC form, occurrences of exceptional adverse climatic conditions allow the contractor to extend the completion time implicitly. The contractor is, however, responsible for the incidental costs. China's Standard Contract is silent on this

issue. In extreme *force majeure* cases, the contractor is entitled to both an EOT and financial compensation under both the FIDIC form and China's standard contract (Clause 19 of the FIDIC form and Clause 39 of China's standard contract); however, under the latter, such compensation is only limited to the repair of the damaged permanent work while the contractor is responsible for the injury and damage of his own personnel and construction equipment (Clause 39 of China's standard contract), implying that the employer and the contractor share the risks under *force majeure*. China's standard contract is very clear in allocating the geological risk by stating that the employer is responsible for providing the geological data and for its accuracy (Clause 8). This clear-cut contractual language helps reduce disputes between the two parties. However, the FIDIC form uses very vague language in allocating such geological risk. It might be argued that, if the geological risk is completely allocated to the employer as is the case under China's standard contract, the contractor, who directly undertakes the construction work may lose motivation to take active and positive measures and precautions to deal with the geological conditions, thus reducing its work efficiency; however, at the tendering stage, the employer (or the engineer on his behalf) should be more knowledgeable of the site conditions than the contractor as it is the party who has the most information to forecast risk. The FIDIC form, however, attempts to strike a balance by stating that, on the one hand, the employer is not responsible for the accuracy of the site data provided by him and the contractor is responsible for its interpretation (Sub-Clause 4.10); and that, on the other hand, the employer is only responsible for such geological risk if such risk event is reasonably unforeseeable by the contractor at the tendering stage (Sub-Clause 4.12). While this may, theoretically, make the contractor take the initiative in dealing with the geological problem encountered, the intention to prove such a risk event was unforeseeable by him at the tendering stage. By relying on such contractual language to potentially make a claim against the employer, the contractor's initiative may be reduced and even result in his inaction. This is contrary to FIDIC's original intention as such ambiguous language is more likely to lead to frequent disputes that consume a lot of unnecessary stress and effort by both parties. Further, such a provision might discourage the employer from providing the best possible accurate data, or can even result in the employer concealing negative site conditions to elicit low bids (Sub-Clause 4.10). The fact that disputes in international contracting occur rather frequently suggests the inefficiency of such ambiguous contractual language. Language clarity may be a more specific and practical principle in risk allocation and may outweigh the seemingly reasonable but ambiguous language that may result in frequent disputes. Social risks, such as theft and vandalism, are borne by the contractor under both the contracts. Such losses happen to the contractor in the first instance and it seems to be more efficient for the contractor to take care of site security, as specified in the two contracts. For political risks, such as war, riot and strike, the FIDIC form is seen as pro-contractor, in that the contractor is entitled to an EOT and compensation caused by the occurrence of such external events (Sub-Clause 19.4). China's standard contract stands somewhat neutral in dealing with the political risks. The contractor is entitled to an EOT for such risks but shares the costs with the employer, i.e. the contractor shall bear the costs for injuries and damage of his site personnel and construction equipment. The employer shall bear other costs, such as repairing the permanent works and clearance of site debris (Sub-Clause 39.3), as the employer is in a better position to 'control' their own properties in such events. Sharing political risks is conducive to motivating both parties to make efforts to mitigate losses caused by such risks.

Under both the FIDIC form and China's standard contract, economic and legal risks are mostly retained by the employer, by means of clear contractual language. Such clear language helps reduce disputes in dealing with price adjustment regarding legal changes and price fluctuations. Lastly, *force majeure*, as one of the important topics in risk management, merits special attention. Both contracts adhere to the principle of sharing the risks of *force majeure* events between the employer and contractor (FIDIC Sub-Clauses 19.4 and 19.6; China standard model contract 39.3).

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12.15.2 Risk allocation in P&DB

Risk allocation in P&DB comes from CONS. The differences mainly relate to the fact that the contract price is not measured (being a lump sum) and that the contractor bears greater risk in connection with the design, its own technical concepts and sequencing of works. The contractor is further exposed to higher demands whenever discrepancies come to light in tender documentation. See also the Chapters 3 and 15 for more details.

12.15.3 Risk allocation in EPC

EPC allocates some of the above-described employer's risks to the contractor (beyond the limits of P&DB), mainly in connection with errors in tender documentation and with examination of the on-site physical conditions. Only limited possibilities to claim are then available to the contractor. Primarily, the contractor's claims under Sub-Clauses 1.9 – Delayed Drawings or Instructions, 4.7 – Setting Out and 4.12 – Unforeseeable Physical Conditions are not permitted.

Under EPC, the contractor is not entitled to an extension of time for extremely adverse climatic conditions, unless they constitute *force majeure* under Clause 19. On the other hand, EPC limits the extent of the employer's instructions to: (1) those necessary for the contractor's obligation; and (2) which must be clearly identified and communicated. The employer is not empowered to instruct the contractor to complete prior to the time for completion and the contractor is not obliged to comply with any such instruction.

Design risks lie fully with the contractor being, in EPC, deleted from the enumeration under Sub-Clause 17.3 (g) of CONS and P&DB. The same applies to risks of unforeseeable natural forces except for those that are so adverse and exceptional that they will become *force majeure* events as per Sub-Clause 19.1 (v) of EPC, where (within a demonstrative enumeration) natural catastrophes such as earthquakes, hurricanes, typhoons or volcanic activity are specified as being subject to contactor claims for an extension of time for completion only. Exclusively man-made *force majeure* events are subject to contractor's claims for additional payments.

A substantial risk shift is encountered in Sub-Clause 4.12 of the FIDIC EPC/1999 Silver Book which has an updated title '*Unforeseeable Difficulties*'. Sub-Clause 4.12 stipulates that 'except as otherwise stated in the contract, the contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Works'. It is further stipulated that the contractor – by signing the contract – accepts total responsibility for having foreseen all difficulties and costs of successfully completing the works and the contract price shall not be adjusted to take account of any unforeseen difficulties or costs.

Such a contract is appropriate only for specific projects. The FIDIC position is as explained in the following foreword to the FIDIC EPC/1999 Silver Book.

Explanation of FIDIC EPC risk allocation by FIDIC

FIDIC's Red and Yellow Books have been in widespread use for several decades, and have been recognized, among other things, for their principles of balanced risk sharing between the employer and the contractor. These risk-sharing principles have been beneficial for both parties, the employer signing a contract at a lower price and only having further costs when particular unusual risks actually eventuate, and the contractor avoiding pricing such risks which are not easy to evaluate. The principles of balanced risk-sharing are continued in the new 'construction' and 'plant and design-build' books. In recent years it has been noticed that much of the construction market requires a form of contract where certainty of the final price, and often of the completion date, is of extreme importance. Employers on such turnkey projects are willing to pay more – sometimes considerably more – for their project if they can be certain that the agreed final price will not be exceeded. Among such projects can be found many projects financed by private funds, where the lenders require greater certainty about a project's costs to the Employer than is allowed for under the allocation of risks provided for by FIDIC's traditional forms of contracts. Often the construction project (the EPC – engineer, procure, construct – contract) is only one part of a complicated commercial venture, and financial or other failure of this construction project will jeopardize the whole venture. For such projects it is necessary for the contractor to assume responsibility for a wider range of risks than under the traditional Red and Yellow Books. To obtain increased certainty of the final price, the contractor is often asked to cover such risks as the occurrence of poor or unexpected ground conditions, and that what is set out in the requirements prepared by the employer actually will result in the desired objective. If the contractor is to carry such risks, the employer obviously must give him the time and opportunity to obtain and consider all relevant information before the contractor is asked to sign on a fixed contract price. The employer must also realize that asking responsible contractors to price such risks will increase the construction cost and result in some projects not being commercially viable. Even under such contracts the employer does carry certain risks such as the risks of war, terrorism and the like and the other risks of *force majeure*, and it is always possible, and sometimes advisable, for the parties to discuss other risk-sharing arrangements before entering into the contract. In the case of BOT (build-operate-transfer) projects, which are normally negotiated as a package, the allocation of risk provided for in the turnkey construction contract negotiated initially between the sponsors and the EPC contractor may

need to be adjusted in order to take into account the final allocation of all risks between the various contracts forming the total package.

Apart from the more recent and rapid development of privately financed projects demanding contract terms ensuring increased certainty of price, time and performance, it has long been apparent that many employers, particularly in the public sector, in a wide range of countries have demanded similar contract terms, at least for turnkey contracts. They have often irreverently taken the FIDIC Red or Yellow Books and altered the terms so that risks placed on the Employer in the FIDIC Books have been transferred to the contractor, thus effectively removing FIDIC's traditional principles of balanced risk sharing. This need of many employers has not gone unnoticed, and FIDIC has considered it better for all parties for this need to be openly recognized and regularized. By providing a standard FIDIC form for use in such contracts, the Employer does not have to attempt to alter a standard form intended for another risk arrangement, and the contractor is fully aware of the increased risks he must bear. Clearly the contractor will rightly increase his tender price to account for such extra risks. This form for EPC/turnkey projects is thus intended to be suitable, not only for EPC contracts within a BOT or similar type venture, but also for all the many projects, both large and smaller, particularly E & M (Electrical and Mechanical) and other process plant projects, being carried out around the world by all types of employers, often in a civil law environment, where the government departments or private developers wish to implement their project on a fixed-price turnkey basis and with a strictly two-party approach. Employers using this form must realize that the 'employer's requirements' which they prepare should describe the principle and basic design of the plant on a functional basis. The tenderer should then be permitted and required to verify all relevant information and data and make any necessary investigations. He shall also carry out any necessary design and detailing of the specific equipment and plant he is offering, allowing him to offer solutions best suited to his equipment and experience. Therefore, the tendering procedure has to permit discussions between the tenderer and the employer about technical matters and commercial conditions. All such matters, when agreed, shall then form part of the signed contract. Thereafter the contractor should be given freedom to carry out the work in his chosen manner, provided the end result meets the performance criteria specified by the employer. Consequently, the employer should only exercise limited control over and should in general not interfere with the contractor's work. Clearly the employer will wish to know and follow progress of the work and be assured that the time programme is being followed. He will also wish to know that the work quality is as specified, that third parties are not being disturbed, that performance tests are met, and otherwise that the 'employer's requirements' are being complied with. A feature of this type of contract is that the Contractor has to prove the reliability and performance of his plant and equipment. Therefore special attention is given to the 'Tests on Completion', which often take place over a considerable time period, and taking over shall take place only after successful completion of these tests. FIDIC recognizes that privately-financed projects are usually subject to more negotiation than publicly-financed ones and that therefore changes are likely to have to be made in any standard form of contract proposed for projects within a BOT or similar type venture. Among other things, such form may need to be adapted to take account of the special, if not unique, characteristics of each project, as well as the requirements of lenders and others providing financing. Nevertheless, such changes do not do away with the need for a standard form by FIDIC.

12.16 Design responsibility under FIDIC forms

In general, responsibility for design is governed by Sub-Clause 4.1, stipulating that the contractor shall design, execute and complete the works as specified in the contract and with the engineer's instructions and shall remedy any defects in the works. The scope of design may be defined in the *Particular Conditions* (and/or in other contractual documents, such as the *Specifications*) including details of design approval procedures and so on. In the general part of the FIDIC forms, it is mainly the contractor's obligation under Sub-Clause 7.1 to manufacture or acquire the *Plant and Materials* and further execute the works with care, in a proper workmanlike and careful manner, in accordance with recognized good practice and to properly use equipped facilities and non-hazardous materials. It is further stated in Sub-Clause 8.3 (d) that the contractor shall submit a detailed schedule to the engineer (including a general description of the methods which the contractor intends to adopt) and the major stages, in the execution of the works.

Moreover, in P&DB and EPC, there is a whole new chapter dealing with design (Chapter 5) which has been added. When completed, the works shall be fit for the purposes for which the works are intended as defined in the contract. The contractor is responsible the design under both mentioned design-build forms. However, it is worth emphasizing that under Sub-Clause 1.13 the employer must obtain (or shall obtain) the planning, zoning or similar permission for the permanent works. According to Sub-Clause 4.1 of CONS, if the contract specifies that the contractor shall design any part of the permanent works, then, unless otherwise stated in the *Particular Conditions*, the contractor shall be responsible for this part and the works shall, when completed, be fit for the purposes for which they are intended as specified in the contract.

With the traditional form of design-bid-build (i.e. CONS), a major portion of responsibility for the design is borne by the employer. The tender specifications contain a more detailed design and include, for example, geological surveys. Under the design-build delivery method, the employer's requirements specify only the purpose, scope, and/or design and/or other technical criteria for the works. The contractor will then prepare their proposal (usually complete with the basic design). The financial investment the contractor is willing to commit to tender will always depend on a particular project, priorities, time for bid preparation and economic cycle. The contractor will certainly oppose excessive expenses involved in bid preparation – especially in cases where these expenses can only be recovered, if the bid is successful.

The approach to design preparation is different in particular countries and under different public law related to individual stages of the design. The practice of employers who, for example, refund the cost of bid preparation to applicants may also be of importance.

Concerning the procedures for preparing and approving the design during the execution of the works, P&DB and EPC provide further details in Sub-Clause 5.2. As stipulated here, if the *Employer's Requirements* specify that the *Contractor's Documents* are to be submitted to the engineer for review and/or for approval, they shall be subject to the 'review period'. Unless otherwise stated in the *Employer's*

Requirements, each review period shall not exceed 21 days – calculated from the date on which the engineer receives the contractor's document and the contractor's notice. The notice shall also state that the contractor's document is deemed as ready for both review (and, if specified, for approval) and use. Sub-Clause 5.2 further deals with the conduct of the engineer. The engineer may return the documents to the contractor during the review period if they do not comply with the conditions of contract. The engineer may also approve the documents with or without comments. However, execution of works shall never commence until the engineer has approved the *contractor's document*. Apart from the above, the engineer shall be (within a P&DB) deemed to have approved the *contractor's document* upon the expiry of the review periods for all the *contractor's documents* which are relevant to the design and execution of such part.

Another significant provision of P&DB's Clause 5 are Sub-Clauses 5.2 (d) [5.2 (c) in EPC]. These instruct that if the contractor wishes to modify any design which has previously been submitted for review, the contractor shall immediately give notice to the engineer and submit the revised documents to the engineer. It is stipulated in general that any approval, consent or review by the engineer shall not relieve the contractor of their responsibilities. It applies under Sub-Clause 5.8 of P&DB and EPC that if errors, ambiguities, inconsistencies, drawbacks or other defects are found in the *contractor's documents*, they and the works shall be remedied at the contractor's expense notwithstanding any consent or approval under Chapter 5.

The requirements for as-built documents and/or for various partial shop drawings shall regularly be provided by the contract (specifications, particular conditions, and so on) and/or by the governing law of contract. The contractor is obliged to update their documents in response to changes in legislative requirements, technical standards, and so on. The consequences shall be dealt with as a variation in compliance with Clause 13 or as a claim under Sub-Clause 20.1.

Under P&DB, upon receiving notice of commencement of works:

> The contractor shall scrutinise the employer's requirements (including design criteria and calculations, if any) and the items of reference mentioned in Sub-Clause 4.7 [Setting Out]. Within the period stated in the appendix to tender, calculated from the commencement date, the contractor shall give notice to the engineer of any error, fault or other defect found in the employer's requirements or these items of reference. After receiving this notice, the engineer shall determine whether Clause 13 [Variations and Adjustments] shall be applied, and shall give notice to the contractor accordingly. If and to the extent that (taking account of cost and time) an experienced contractor exercising due care would have discovered the error, fault or other defect when examining the Site and the Employer's Requirements before submitting the Tender, the Time for Completion shall not be extended and the Contract Price shall not be adjusted.

EPC Sub-Clause 5.1 deems the contractor to have scrutinized (prior to the Base Date), the employer's requirements (including design criteria and calculations if any). The contractor shall be responsible for the design of the works and for the accuracy of such Employer's Requirements (including design criteria and calculations) except as stated below. The employer shall not be responsible for any error, inaccuracy or omission of any kind in the employer's requirements as originally included in the contract and shall not be deemed to have given any representation of accuracy or completeness of any data or information, except as stated below. Any data or information received by the contractor (from the employer or otherwise), shall not relieve the contractor of their responsibility for the design and execution of works. Therefore, this represents an almost complete design risk shift.

The exclusive limits for the above-described risk shift are stated in the last part of this Sub-Clause which stipulate that the employer shall be responsible for the correctness of the following portions of the employer's requirements and of the following data and information provided by (or on behalf of) the employer:

(a) portions, data and information which are stated in the contract as being immutable or the responsibility of the employer;
(b) definitions of intended purposes of the works or any parts thereof;
(c) criteria for the testing and performance of the completed works; and
(d) portions, data and information which cannot be verified by the contractor;
(e) except as otherwise stated in the contract.

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13 Other Standard Forms of Construction Contracts: NEC, ICC, ENNA, IChemE, Orgalime, AIA, VOB

13.1 Common standard forms of construction contracts

The most frequently used international standard forms of construction contracts are the FIDIC forms, the NEC3 and the ICC Model Turnkey Contract for Major Projects. Other respected forms include ENAA, IChemE and Orgalime (Grutters and Fahey, 2013). The German standard VOB and the American Standard prepared by the AIA are both worth mentioning because of their long tradition and established use in their home jurisdictions.

FIDIC forms are used almost universally. They have the widest geographical acceptance because of their strong tradition, support of lenders, well-known familiar principles and greatest flexibility of use (for a discussion of FIDIC forms, see Chapter 12).

While NEC forms are gaining increasing popularity, they bring a new, but unfamiliar style and most users face a significant learning curve. Moreover, precise NEC project management tools are hard to implement universally.

13.2 The NEC (New Engineering Contract)

The New Engineering Contract (NEC) was published in 1993 for the first time with the second edition of the box set (launched in 1995), adding several new documents to the family, including a professional services and adjudicator's contract. This led to 10 years of extensive and successful usage with significant feedback from the industry on the contract in practice. This feedback was integrated into the development process and culminated in the launch of NEC3 in 2005 (reissued in April 2013 with minor changes).

With an estimated total cost of £14.5 billion and a peak workforce of 14,000 people by 2013, Crossrail in London is Europe's largest construction project and the biggest ever to be procured by NEC3 contracts.

The London 2012 Olympic Park is also one of the most successful projects where NEC3 contracts were used. With risk to the Olympic Delivery Authority very

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high and enormous pressure to deliver under public scrutiny, a solid procurement strategy was fundamental. According to Ken Owen, after handling in excess of 50,000 compensation events over the life of the project, only one issue went to adjudication.

The NEC was created by the Institute of Civil Engineers as an attempt to move away from traditional forms of contract which were only about legal rights and obligations and to create a contract which would encourage good project management as well as being easy to use. It is the UK government's contract of choice at present.

The NEC form of contract was referred to in the report published by Sir Michael Latham in 1994, entitled *Constructing the Team*. That report reviewed the construction industry in detail and called for greater collaboration and for parties to align their commercial interests to avoid disputes. This report also led to the government introducing legislation which regulated construction contracts by requiring certainty on payment and giving each party a right to refer disputes to adjudication with an enforceable decision on payment within 28 days (*The Housing Grants, Construction and Regeneration Act* 1996b as amended by the *Local Democracy, Economic Development and Construction Act* 2009).

The Latham Report was followed by *Rethinking Construction*, a report produced by Sir John Egan in 1998. That report also called for greater collaboration and a move from the traditional ways of managing construction projects. It identified the key drivers for change as committed leadership, a focus on the customer, integrated processes and teams, a quality-driven agenda and commitment to people.

It was the recent financial crisis, however, that provided a real driver for change because it was necessary to find ways of reducing the costs of infrastructure projects. These issues were covered in two reports produced by Constructing Excellence; *Never Waste a Good Crisis*, and *Infrastructure in the New Era*.

On the basis of these developments, the UK government has also looked at the UK's spending on infrastructure. In 2011, it published a National Infrastructure Plan to provide a full and coherent strategy for infrastructure in the UK (updated in 2012). In March 2013, the UK government published for consultation its Infrastructure Routemap where it sets out how it will provide cost savings and improve infrastructure projects. In 2014, the UK Government had trialled three new methods of procurement: Cost Led Procurement, Integrated Project Insurance and Two-stage Open Book to achieve the most cost-effective and value for money solutions by integrated project teams working collaboratively.

The use of the NEC form of contract has been endorsed as a contract which also promotes collaborative working. NEC is designed as an international contract and the first clause of the NEC sets out an overarching obligation on the parties to act in accordance with the terms of the contract and in a spirit of mutual trust and cooperation. This is intended to emphasize the collaborative nature of the contract and the expectation that parties will cooperate to help each other. In that respect, it should be noted that under English law there is no general duty of good faith and such obligations may not be enforceable.

Unlike other forms of contract, the NEC is short, written in simple language and meant to be used by people on site. It is intended as a tool for good project management and is more than a mere contractual document.

An important feature of the NEC contract is the concept of 'early warnings'. The principle is simple and means that whenever a party (whether employer or

contractor) identifies an issue that could affect cost, time or performance in general, it should notify the other party. The parties would then meet to discuss how that risk can be avoided or limited. This is a step away from the traditional 'who has the liability?' approach and recognizes that it is in both the employer's and the contractor's interest to avoid risk, regardless of whose risk it is.

The programme plays a key role in the NEC contract. It is intended as a joint tool which sets out the obligations of both parties. There is a detailed list of what the programme must include. For example the order and timing of works by other parties, float and time allowed for risk, dates where information from other parties is needed and, for each operation, a statement of how the contractor plans to do the work and identifying the equipment and resources.

The programme is therefore used by the project manager to monitor and manage the works and to assess the entitlement to an extension of time in the event of changes or other employer risks (known as compensation events). The programme has to be updated on a regular basis (usually every four weeks) and submitted for approval. When this is done, both parties will have a comprehensive updated programme which helps to manage the works efficiently and to determine any potential entitlement more accurately.

Under the NEC, change and other employer risks lead to *compensation events* and they provide one single process for assessing additional costs and extensions to the completion date. A contractor must submit a quotation within three weeks and the project manager must make an assessment within two weeks. The intention is to deal with payment and delay as they happen and on the basis of forecasts so that price and the period for completion can be updated within a very short period. As a result, there should be no need for a final account process as issues should be decided as the works progress.

The NEC has six main options which set out different bases for payment. The most popular form appears to be Option C, which is a target cost contract.

If there is a dispute, it must be referred to adjudication in the first instance before court proceedings or arbitration. The NEC provides for a decision to be made within a four-week period, which will be binding unless a party serves a notice within four weeks.

Adjudication has proved very popular in the UK because it allows a quick resolution of disputes in a short period at a much lower cost than arbitration or court proceedings. In many cases, the outcome is acceptable to both parties and they can move on instead of having to direct resources to a lengthy arbitration process. This is especially the case where the identity of the potential adjudicator can be agreed to in advance in the contract. Adjudication may not, however, be suitable for all types of disputes.

It is important to appreciate that using the NEC form or its principles will require a change in culture and thinking, as well as an effort to manage change and risks as they happen. Nonetheless, if used as intended, such an approach can benefit both parties.

13.2.1 NEC forms of contract

Based on the information at http://www.neccontract.com, NEC sample forms of contracts for works encompass purchases such as the construction of buildings,

highways and major process plant and equipment. The contracts for services include purchases of both professional services such as engineering, architectural and consultancy works along with more composite maintenance or management services such as soft/hard facilities management, cleaning, catering, security services, maintenance of a specific plant/building, data processing and ambulance services.

A contract for supply includes the supply of high value goods and associated services such as transformers, turbine rotors, rolling stock, loading bridges, transmission plants and cables and process plants together with lower risk goods and associated services such as building materials, simple plant and equipment, stationery, PPE, manufacturing parts, components and store items.

The NEC contracts for works are namely:

1. NEC3 Engineering and Construction Contract (ECC). This contract should be used for the appointment of a contractor for engineering and construction work, including any level of design responsibility.
2. NEC3 Engineering and Construction short Contract (ECs). This contract is an alternative to ECC and is for use with contracts which do not require sophisticated management techniques, comprise straightforward work and impose only low risks on both client and contractor.
3. NEC3 Engineering and Construction subcontract (ECs). This contract should be used for the appointment of a subcontractor for engineering and construction work where the contractor has been appointed under the ECC and is written as a back-to-back set of terms and conditions.
4. NEC3 Engineering and Construction short subcontract (ECss). This contract can be used as a subcontract to ECC or ECsC. it should be used with contracts that do not require sophisticated management techniques, comprise straightforward work and impose only low risks on both the contractor and subcontractor.

The NEC contracts for services are namely:

1. NEC3 Term service Contract (TsC). This contract should be used for the appointment of a supplier to maintain a service or manage and provide a service. These services may include elements of design and relate to physical works or soft services such as facilities management. They may have discrete packages of project works, though where the bulk of the scope is about delivering a physical end product it may be appropriate to use the ECC/ECsC as an alternative. The TsC contains a *call off* facility.
2. NEC3 Term service short Contract (TssC). This contract is an alternative to TsC and is for use with contracts which do not require sophisticated management techniques, comprise straightforward services and impose only low risks on both client and a contractor.
3. NEC3 professional services Contract (psC). This contract should be used for the appointment of a supplier to provide professional services such as engineering, design or consultancy. Unlike the TsC, which is about maintaining an asset, this contract concerns the provision of professional advice. This contract, like the TsC, contains a *call off* facility.

The NEC contracts for supply are namely:

1. NEC3 supply Contract (sC). This contract should be used for local and international procurement of high-value goods and related services including design.
2. NEC3 supply short Contract (ssC). This contract should be used for local and international procurement of goods under a single order or on a batch order basis, and is for use with contracts which do not require sophisticated management techniques and impose only low risks on both the purchaser and the supplier.

Other NEC sample forms include:

1. NEC3 adjudicator's Contract (aC). This contract should be used for the appointment of an adjudicator to decide disputes under the NEC3 family of contracts. It may also be used for the appointment of an adjudicator under other forms of contract.
2. NEC3 Framework Contract (FC). This contract should be used for the appointment of one or more suppliers to carry out construction work or to provide design or advisory services on an 'as instructed' basis over a set term. This umbrella contract must be used in conjunction with one or more of the other NEC3 contracts and comes with a sophisticated *call off* mechanism.

The ECC, ECS, PSC and TSC offer a range of options to select from that builds up the contract terms to suit the works or services. At the heart of the contract conditions are the core clauses which contain the essential common terms. To this must be added a main option, which will determine the particular payment mechanism. Finally, the selected secondary options are combined with the core and main option clauses to provide a complete contract.

Based on the information at http://www.neccontract.com, this approach gives even greater choice to contracting parties to assemble the appropriate contract conditions to suit. The ECC, ECS, PSC and TSC offer different basic allocations of financial risk between the parties through the main options. The ECC main options are as follows:

1. Options A and B: these are priced contracts with the risk of carrying out the work at the agreed prices being largely borne by the contractor.
2. Options C and D: these are target cost contracts in which the out-turn financial risks are shared between the client and the contractor in an agreed proportion.
3. Options E and F: these are cost-reimbursable types of contract with the financial risk being largely borne by the client.

The particular options lead to the following basic forms of contracts:

A. Priced contract with activity schedule
B. Priced contract with bill of quantities
C. Target contract with activity schedule

D. Target contract with bill of quantities
E. Cost-reimbursable contract
F. Management contract
G. Term contract

Key to the successful use of NEC is users adopting the desired cultural transition. The main aspect of this transition is moving away from a reactive and hindsight-based decision-making and management approach to one that is foresight-based and encourages a creative environment with proactive and collaborative relationships.

Based on the information at http://www.neccontract.com, NEC offers a range of measures from which the parties can select some to give best value for any particular project or programme of work. These are present at a bi-party level and there can be common incentives across a number of partners when *Option X12 Partnering* is used. The range of NEC incentives includes matters that affect time, cost and quality. The following list gives some examples:

- Bonus for early Completion – in ECC there is provision for introducing a bonus for each day the contractor completes the works ahead of the contractual Completion Date.
- Target cost – in ECC, TSC and PSC, the client can utilise target cost arrangements if the supplier delivers the out-turn cost below the level of the final target. Savings are then shared according to a pre-agreed formula. A similar sharing arrangement of over-run reciprocates this arrangement.
- Key Performance Indicators (KPIs) – KPIs can be introduced through *Option X12 Partnering* and *Option X20* for any matter the parties care to agree upon. Examples include the number of defects, whole project costs to the client, rate of progress of certain works, whether client satisfaction levels were reached, whether the asset is cheaper to operate and maintain than expected, and so on.

13.3 FIDIC forms versus NEC3

NEC is intended for global application and has been adopted in many multi-disciplinary projects worldwide. However, the NEC's common law pedigree continues to cause problems in an international construction law context. To quote Lloyd (2009):

> [S]ince NEC3 is written in plain and simple English, it ought to be capable of being used throughout the world without the possibility of its meaning varying with whatever law governs it. That may not always be true, if only because whoever is to decide what the contract means may not have the requisite background or experience or simply because some of the assumptions upon which the NEC has been constructed are implicit or not sufficiently explicit.

In terms of risk allocation, NEC3 is based on similar principles to FIDIC, i.e. a balanced risk allocation.

Both FIDIC forms and the NEC3 include re-measurement and a lump sum form. The NEC3 has a special form for construction management (management contracting) and cost plus price determination (cost-reimbursable). The FIDIC Blue Book also uses the cost plus approach and the White Book uses the Construction Management delivery method. The most popular, however, is the target price option for which is no equivalent under FIDIC forms. There is not a contract with EPC risk allocation (e.g. such as the FIDIC EPC/1999 Silver Book) under the NEC forms.

In terms of the interim payments, the NEC3 requires works to be paid on the basis of forecasts (of payments to subcontractors) plus a fee. FIDIC is based on retrospective valuations.

The approach to risk allocation and claims are similar. Both forms enumerate employer risks and contain *ex contractu* claims (compensation events in the NEC3).

The NEC3 supports best practice project management by using early warning notices, risk reduction meetings, time bars, deemed acceptances, prompt resolution of problems and assessment of financial implications of claims. In comparison to the 1999 FIDIC forms, those instruments represent a positive development but the question of whether they can be used successfully outside the UK remains.

If the contractor claims a compensation event under the NEC but fails to give an early warning, Sub-Clause 63.5 states that its entitlement to an extension of time and financial compensation will be assessed 'as if the contractor had been given an early warning' (Downing, et al., 2013). Such events must be entered into a risk register for their influence to be decreased in risk reduction meetings.

The NEC3 contains an eight-week time bar in Sub-Clause 61.3 in contrast to 28 days in FIDIC forms. According to Lloyd (2009), employers are usually concerned about the effectiveness of contractual sanctions. From this aspect, Sub-Clause 61.3 is a key provision for notifying compensation events stating that:

> The contractor notifies the project manager of an event which has happened or which he expects to happen as a compensation event if:
>
> - the contractor believes that the event is a compensation event; and
> - the project manager has not notified the event to the Contractor.
>
> If the contractor does not notify a compensation event within eight weeks of becoming aware of the event, he is not entitled to a change in the prices, the completion date or a key date unless the project manager should have notified the event to the contractor but did not.

If the project manager does not respond to a claim for a compensation event or a quote, the contractor can warn them of this. If no response is received within two weeks, their acceptance is deemed (see minor changes in Sub-Clauses 61.1, 61.3, 61.4 and 63.1 in the NEC3 2013 edition).

A significant difference arises in claim quantification. Under FIDIC, claims by the contractor are evaluated retrospectively. Under the NEC, the project manager is required to assess the impact of a compensation event on the programme and budget by forecasting its time and cost effects. This is done based on the information available at the time. Once assessed, the compensation event cannot be revisited and

reassessed if the forecasted effects turn out to be inaccurate or are overtaken by later events. Where the effects are too uncertain to predict, it can state the assumptions on which the assessment is based. If any of these assumptions are found later to be wrong, a correction can be made. From the contractor's perspective, it must ensure that its quotations are comprehensive. Quotes cannot be revised once submitted, even if the contractor discovers that they have failed to allow for all additional costs or delays. The basic principle is that claims should be dealt with and finally resolved on an ongoing basis even if this means accepting an imprecise, 'rough and ready' approach. The underlying philosophy is that it is better to dispose of claims promptly, rather than allowing them to remain unresolved and potentially sour the relationship between the employer and the contractor (Downing, et al., 2013).

FIDIC does not contain an express good faith obligation such as the NEC duty to act in 'the spirit of mutual trust and cooperation'. The phrase 'mutual trust and co-operation' implies not only honesty and reasonableness but an obligation to do more than the contract calls for if it is truly to be performed co-operatively (Lloyd, 2009).

On the other hand there is an obligation of the project manager to act fairly and impartially. This fact was established in the case *Costain Ltd.v. Bechtel Ltd* [2005] EWHC 1018 (TCC) where the court held that the project manager does, under the NEC3, have a duty to act impartially where they act as a certifier or assessor of claims.

Under the NEC3, the employer must be fully engaged in the project's daily routine in contrast to the FIDIC EPC/1999 Silver Book approach, for example. Instead of an engineer, the employer appoints a supervisor to monitor the quality of the work to identify defects. The key administrative role is then undertaken by the project manager. The project manager (either an independent consultant or an employee of the employer) and supervisor can be one person. In practice, this means that further project management resources must be hired on behalf of the employer.

The importance of the project manager is defined by their extended responsibility. For example, when both the employer and the contractor want to terminate the contract, they must notify the project manager and receive a certificate to that effect from the project manager.

Contract administration is done by the project manager who has a key role under NEC according to Lloyd (2009). There are numerous references to what is expected of the project manager. For example, the employer has to appoint someone who will discharge a wide range of duties as required by the contract. The employer is free to replace the project manager on the giving notice of the name of a replacement (see core Clause 14.4), though the employer's freedom must not infringe core Clause 10. The core clauses on payment (section 5) and compensation events (section 6) envisage that the project manager will make assessments as to money (section 5) and of compensation events (section 6). According to Lloyd (2009), the NEC3 appears to provide no mechanism whereby the project manager can revise a decision, for example, where there has been an over-estimate of additional time required (and, with it, cost).

The time schedule (programme) is a key instrument under the NEC. The requirements of the time schedule are much broader under the NEC than under FIDIC, e.g. the project manager can withhold 25% from interim payments until the first

programme is submitted by the contractor – a concept unknown to FIDIC (Downing, et al., 2013).

The NEC3 provides for a dispute to be referred to an adjudicator under option W1 (W2 in the UK). According to Lloyd (2009), whatever reservations there may be about some aspects of adjudication, there is now no doubt that decisions made by adjudicators are generally either accepted by the parties or are used by them as the basis for an agreement to finally settle the dispute. Sir Michael Latham in recommending adjudication as part of his proposals drew on its success under the NEC, especially when employed as it should be, to resolve disputes as they arise – as opposed to leaving them to the end of the contract and thus converting (or 'perverting' as some might say) adjudication into a mini-arbitration. Option W1 therefore ought to be adopted. A party that is dissatisfied has the right to take the resulting dispute to the tribunal, arbitrator or court as stipulated in the contract. That tribunal decides the dispute referred to it. It does not act as an appellate tribunal but as a tribunal of first (and possibly last) instance with the obligation to reach its own decision. Lloyd's (2009) view is that this is especially important for the NEC which has been written on the assumption that those using it will have been trained in and will understand its concepts and philosophies. Whoever decides disputes arising under any construction contract must have the ability to stand in the shoes, as it were, of those who were there at the time and see things as they were then perceived.

13.4 ICC forms of contract

Based on the information at http://www.iccwbo.org, the International Chamber of Commerce (ICC) is the largest business organization in the world comprising hundreds of thousands of member companies in over 130 countries with interests spanning every sector of private enterprise.

The ICC Commission on Commercial Law and Practice (CLP) develops ICC model contracts and ICC model clauses which give parties a neutral framework for their contractual relationships. These contracts and clauses are carefully drafted by CLP Commission experts without expressing a bias for any one particular legal system. They are constructed to protect the interests of all the parties by combining a single framework of rules with flexible provisions allowing participants to insert their own requirements.

The most popular form is the ICC Model Turnkey Contract which provides a balanced contract specifically for the EPC delivery method with the main priority being price and scope certainty. In terms of style and content, this contract sets out its purpose at the beginning, followed by a description of the obligations of good faith (together with a description of what that means in practice) as well as detailed clauses on software issues, bribery and corruption. ICC forms are drafted along well-established legal and contractual principles and are easy to interpret, apply and implement.

The acceptance of ICC documents is increasing, but these forms are perceived as limited in their use in large engineering and plant projects (Grutters and Fahey, 2013).

13.5 ENAA forms of contract

Based on the information at http://www.enaa.or.jp, the Engineering Advancement Association of Japan (ENAA) is a non-profit organization established in 1978. Its aim is to develop diversified activities such as advancement of technological capabilities and promotion of technical development.

The third edition of the ENAA Model form for International Contracts for Process Plant Construction (Turnkey Lump-sum Basis) was published in March 2010. Both the first (1986) and second (1992) editions have been well received by the engineering and construction industries and were widely used in many plant projects throughout the world.

In addition, the ENAA Model form-International Contract for Power Plant Construction (Turnkey Lump-sum Basis) (ENAA model form) was published in 1996 to meet the growing needs for an international contract model form for construction of power plants. A new, updated Power Plant Model form is currently being prepared by the ENAA.

In preparing the ENAA model form, its committee extensively referred to, and took into consideration the comments, recommendations, advice and suggestions of various sources such as the World Bank, other major financing institutions, potential customers and contractors and other relevant organizations in the US and Europe.

The model form was designed to provide a flexible, fair and reasonable balance between the employer and the contractor in terms of the various risks involved in international projects. The ENAA model form is intended for a wide range of users including in-house legal and sales personnel and those who are involved in the various phases of actual project implementation.

13.6 IChemE forms of contract

Based on the information at http://www.icheme.org, the Institution of Chemical Engineers ('IChemE') is the global professional membership organization for people with relevant experience or interest in chemical engineering. The IchemE forms of Contract are developed specifically for performance based plant and process industries.

IChemE has published forms of Contract for over 40 years. There are two contract suites available: forms for use in the UK and forms for international use. Both suites are used across a wide range of process industries and are suitable for the provision of any performance-based plant or project. The contract forms have been formulated to reflect best practice and relationships within the process plant sector.

Each form of contract contains a sample agreement and a set of general conditions. Guidance is provided on compiling the *Specification and Schedules* that are referenced in the agreement. Extensive explanatory notes give users a fuller understanding of the contracts.

The international forms were only recently added to the traditional forms for use in the UK (1st Edition, 2007). They recognize the need for greater cooperation rather than claims in the process industry by including:

- clauses drafted with cooperation in mind;
- precise procedures for disputes;
- the aim for parties to achieve their individual objectives without confrontation;
- encouragement of each party to optimally contribute their specialist expertise essential to the process industry.

In terms of international contracts, the following forms are presented:

- *Lump Sum, The International Red Book, First edition, 2007*. An international version of the lump sum contract with additional clauses to meet the special requirements of international projects. Written in user-friendly English, it removes specific references to UK law while maintaining the tradition of extensive guidance to the schedules and clauses.
- *Reimbursable, The International Green Book, First edition, 2007*. An international version of the reimbursable contract with additional clauses to meet the special requirements of international projects.
- *Target Cost, The International Burgundy Book, First edition, 2007*. An international version of the target cost contract, this contract maintains the tradition of extensive guidance notes to both the schedules and the clauses.
- *Subcontracts, The International Yellow Book, First edition, 2007*. An international version of the subcontract with additional clauses to meet the special requirements of international projects.

IchemE forms are accepted by the process and plant industry. Drafted along well-established legal and contractual principles, they are easy to interpret, apply and implement but remain limited to plant and process projects (Grutters and Fahey, 2013).

13.7 Orgalime forms of contract

Based on the information at http://www.orgalime.org, Orgalime is the European federation representing the interests of European mechanical, electrical, electronic and metal articles industries as a whole at an EU level. Orgalime further represents the interests of both buyers and sellers, licensors and licensees and is the peak body for the European engineering industry.

Orgalime publications aim to provide European engineering industries with documents that can help them to draw up adequate business contracts and give practical advice on frequently occurring legal questions. The publications are, for the most part, drafted by Orgalime member association lawyers.

The first Orgalime legal publication was issued in the 1950s and the current listing now includes 27 titles, some of which have been revised several times in order to reflect new or changing legislation. The publications are divided into four different categories: model forms, guides, general conditions of contract and other publications. The model forms, general conditions and some of the guides are written to provide practical assistance to companies when they draw up different types of contracts commonly used in international trade. The guides also cover other contractual and legal issues of particular importance to the engineering industry.

All general conditions and model forms have been designed to reflect normal contract practice in industry. These are as follows:

- *S2012 : General Conditions for the Supply of Mechanical, Electrical and Electronic Products (ex-S2000)*. These are an updated version of the S 2000 conditions (originally the S 92 conditions). They are primarily intended for use in international contracts for delivery of engineering industry products in general. They can also be used for national contracts but are unsuitable for use in consumer contracts.
- The *Turnkey Contract* issued by Orgalime is for use in industrial works as a new standard contract covering the delivery of complete industrial installations or plants. These are often complex installations and works that need flexible and complete contracts.

The following contract forms have also been made available by Orgalime:

- R02: General Conditions for the Repair of Machinery and Equipment.
- SE 01: General Conditions for the Supply and Erection of Mechanical, Electrical and Electronic Products.
- SW 01: General Conditions for Computer Software, supplement to Orgalime S2000 & Orgalime SE01 (ex-SE94).
- M2000: General Conditions for Maintenance.
- S2000S : Supplementary Conditions for the Supervision of Erection of Mechanical, Electrical and Electronic Products, delivered in accordance with S2000.
- SP 99: General Conditions for Series Processing.
- SC 96/06: General Conditions for the Supply of Specially Designed and Manufactured Components.

13.8 AIA forms of contract: US standard

Based on the information at http://www.aia.org, the American Institute of Architects (AIA) has been the leading professional membership association for licensed architects, emerging professionals and allied partners in the USA since 1857. AIA sets the industry standard in contract documentation with more than 100 of its forms and contracts used in the design and construction industry. These forms and contracts define the relationships and terms involved in design and construction projects.

Prepared by the AIA in cooperation with employers, contractors, attorneys, architects, engineers and others, the documents have been finely tuned during their 120-year history. As a result, these comprehensive contracts and forms are now widely recognized as the industry benchmark.

The AIA documents also reflect the current state of the construction industry. This includes the methodology of how buildings are built, as well as the latest techniques for delivering information to the participants in the project (Sabo, 2013).

AIA forms are grouped into 'families' on the basis of delivery method, size and participants involved. These are as follows:

- *Conventional (A201) family*. Intended for employer projects which are divided into separate contracts for design (with the architect) and construction (with one

or more contractors) where dozens of different documents are required. This is the most commonly used family of documents because it is suitable for the conventional delivery approach of design-bid-build in small, medium and large projects.

- *Construction Manager as Adviser ('CMa') family*. Suitable for scenarios where the employer's project incorporates a fourth prime player (the construction manager) on the construction team (in addition to the employer, architect and contractor) to act as an independent adviser on construction management matters over the course of both design and construction. The CMa approach therefore enhances the level of expertise applied to managing a project from start to finish. In its purest form, this approach preserves the CMa's independent judgment by keeping that individual from being influenced by any monetary interest related to actual labour and materials incorporated in the construction work. The use of this form is intended for small, medium and large public and private sector projects.
- *Construction Manager as Constructor ('CMc') family*. Suitable for such scenarios where the employer's project employs a construction manager who will complete the construction and also provide construction management services. Under the CMc approach, the functions of contractor and construction manager are merged and assigned to one entity that may or may not give a guaranteed maximum price, but which typically assumes control over the construction work by direct contracts with the subcontractors. The use of this form is intended for small, medium and large public and private sector projects.
- *Design-Build family* is used where the project delivery method is design-build. In design-build project delivery, the employer enters into a contract with a design-builder who is obligated to design and construct the project. The design-builder then enters into contracts with architects and construction contractors as needed. The use of this form is intended for small, medium and large public and private sector projects.
- *Integrated Project Delivery (IPD) family* is a collaborative project delivery approach that uses the talents and insights of all project participants across all phases of design and construction. The IPD family provides agreements for three levels of integrated project delivery:
  1. Transitional forms: modelled on existing construction manager agreements which offer a comfortable first step into integrated project delivery.
  2. The *Multi-Party Agreement*: a single agreement that the parties can use to design and construct a project using integrated project delivery.
  3. The *Single Purpose Entity (*SPE) creates a limited liability company for the purpose of planning, designing and constructing the project. The SPE allows for complete sharing of risk and reward in a fully integrated collaborative process. The use of this form is intended for large private sector commercial projects.
- *Interiors family*. This is documents for use in small to large tenant projects for FF&E procurement services (i.e. furniture, furnishings and equipment) and for FF&E procurement combined with architectural interior design and construction services. These documents anticipate procurement of FF&E under a contract separate from design services. The *Interiors* documents

procure FF&E under a contract separate from design services and preserve the architect's independence from any monetary interest in the sale of those goods. AIA Document B152 may be used as the employer/architect agreement for the design of both FF&E and architectural interiors. AIA Document B153 is not suitable for construction work (such as major tenant improvements) but is suitable for design services related solely to FF&E. The use of this form is intended for small, medium and large tenant projects.

- *International family*. For US architects working on projects located in foreign countries. Because US architects usually are not licensed in the foreign country where a project is located, these agreements identify the US architect as a consultant, rather than an architect. The use of this form is intended for small to large projects.
- *Program Management family*. Use of AIA Contract Documents may be appropriate when the employer involves one or more additional consultants (Program Manager and/or Design Manager) to assist with programme-wide design and construction issues. The Program Management approach enhances the level of expertise applied to managing a program from start to finish. The use of this form is intended for large projects.
- *Small Projects family*. May be appropriate for projects which are straightforward in design, of short duration (less than one year from start of design to completion of construction), without delivery complications (such as competitive bidding) and when project team members already have working relationships. This family is suitable for residential projects, small commercial projects or other projects of relatively low cost and brief duration.
- *Digital Practice Documents*. Suitable for projects involving digital data or Building Information Modelling.
- *Contract Administration & Project Management forms* are generally useful for all project delivery methods. The variety of forms in this group includes qualification statements, bonds, requests for information, change orders, construction change directives, payment applications and certificates. The use of this form is intended for small, medium and large projects.

The AIA documents, particularly A201, reflect a consensus as to how a normal construction project is run, who does what, and what the standards in the construction industry are at this time. Anyone wishing to learn how a construction project in the United States runs in the early twenty-first century simply needs to look at A201. Anyone wishing to learn what the architect's normal duties and responsibilities in a construction project might be should review the latest version of B101.

A major advantage of the AIA documents is that they have been tested in the courts. There are literally thousands of court decisions that involve AIA documents (Sabo, 2013).

13.9 VOB: German standard

VOB, *Vergabe und Vertragsordnung für Bauleistungen*; in English: *Procurement and Contracting Rules for Construction Procedures* (VOB) is divided into three sections:

(1) VOB/A (DIN 1960: 2012 – 09) determines general provisions relating to the award of construction contracts mandatory for public entities in the procurement process; (2) VOB/B (DIN 1961: 2012 – 09) sets general conditions of contract relating to the execution of construction works; and (3) VOB/C comprises extensive general technical specifications for building works (so-called DINs from the *Deutsches Institut für Normung*, i.e. the German Institute for Standardization) which form part of the technical state of the art. At the same time, VOB itself is neither an act nor any other legislative regulation but part of a construction contract complementing the general provisions of the *German Civil Code* (BGB). VOB is issued and updated regularly by an autonomous body consisting of those acting on behalf of leading German construction employers and contractors from *Deutscher Vergabe- und Vertragsausschuss für Bauleistungen* (the German Procurement and Contracts Committee). The first edition of VOB dates back to 1926, having seen 15 (Part A) and 17 (Part B) amendments since then. The latest version of VOB was released in 2012.

Public employers in Germany must use the VOB/B conditions of contract by law. Private employers do not have to use VOB but appreciate their tradition and well-balanced nature and often use them in practice as general terms of conditions due to the incomplete BGB rules for construction contracts. Public employers are further required to use the newest edition of VOB/B, whereas private employers are allowed to use any earlier version. It is therefore important to know what version of VOB/B is, in fact, incorporated in the contract, especially in the case of private employers.

VOB is issued in the 'DIN' form. DIN recommends general standards for various fields of human activities and behaviour which are not binding by virtue of law. They become legally binding and enforceable only when referred to by law or incorporated in a contract. Only then do the DINs lose their 'persuasive' nature and become binding as part of the VOB/B as general terms and conditions.

The main conceptual differences between the conditions of contract in Germany and many other countries should also be noted. The parties may, as part of the contract, agree upon pre-formulated conditions introduced by one party, very often as standard conditions of contract and normally attached to the contract. But such standard conditions of contract may be subject to a rigorous control of content by the courts. By way of example, a provision in the standard conditions of contract is invalid according to §§307 BGB if it unreasonably puts the contractual partner of the party who introduced the clause at a disadvantage. The courts only apply control of content if the provisions to be assessed are contained in *Standard Terms and Conditions* under §305 BGB which state that such form of contract must be namely, (1) meant for use on more than one occasion; and (2) imposed by one party on the other. The question of whether a clause creates an 'unfair disadvantage' for the other party depends mainly on whether it 'contradicts' the essential, fundamental principles of law. The question asked by the court when determining whether a 'contradiction' of principles exists is whether the content reflects justness/fairness.

There is an exemption from this control-of-content rule under §310 Sub-Clause 1 sentence 3 BGB being the *privilege of VOB/B*. According to this section, should VOB/B be incorporated in the original wording, the clauses are not subject to control of content and the court will regard them as fairly balanced. Where the parties

deviate from the standardized version on only one single point – be it expressly or by agreement upon additional conditions (which often happens) – all clauses are separately subject to control of content and individually assessed. In practice, many such VOB/B provisions are seen as unbalanced and therefore considered invalid by the German judges if disputes arise. VOB/B clauses can be changed through direct negotiation between the parties (see Kus, A., Jochen, M. and Stering, R., 1999).

As mentioned above, the VOB system of standards is divided into three parts: A (procurement), B (execution of the works) and C (technical standards). A summary of these standards is as follows.

Section A of VOB (DIN 1960) includes all the general rules of construction procurement. VOB/A is harmonized with the relevant EU directives regulating the stages of construction project from a tender announcement by an employer up to the point of awarding the contract to a contractor. §6 of the German *Vergabeverordnung* (Public Procurement Regulation) prescribes that (mainly) public entities must apply VOB/A during the procurement of construction works.

General Conditions of Contract for Execution of Construction Work constitute the scope of Part B of VOB (DIN 1961). This document regulates the stages of a construction project from the signing date of the contract for construction up to the end of the *Defects Liability Period*.

As under §1, Sub-Clause 1 of VOB/B, Part C of VOB is also a part of a (VOB/B) contract for construction works, regulating the technical conditions of contract, standard and scope of the works if not otherwise agreed upon. As per §1 Section 2, Point 5 of VOB/B, the VOB/Cs prevail over VOB/B in case of conflict between VOB/B and VOB/C clauses.

According to VOB/A §8 Sub-Clause 3, public entities must use VOB/B and VOB/C in construction contracts.

13.9.1 Content of VOB/B

Allgemeine Vertragsbedingungen für die Ausführung von Bauleistungen; in English: *General Conditions of Contract for Execution of Construction Work* (VOB/B) contain, for example, the following.

§1 stipulates the nature and scope of performance. This includes the legal force of particular documents forming the contract.

§2 details how contract price is determined. Measurement is the primary approach (on the basis of unit prices and work actually done) unless another way to determine the contract price (e.g. based on the lump price, hourly wage rates, cost plus) is agreed to. §2 sets out which works are part of the agreed contract price and which works have to be paid additionally, especially when changes to the scope of works are made.

§§3 to 6 generally address execution of works. §3 specifically deals with the employer's and/or contractor's documents necessary for execution of works.

§4 determines the details for the execution of works. In particular, that the contractor shall carry out the works at their own risk as stipulated in the contract while observing the law and standards. The contractor, for example, is also obliged to notify the employer about their (the employer's) improper instructions.

§5 deals with time for completion,

§6 specifically deals with an extension of time for completion and/or additional payments because of obstacles and suspensions in work, stipulating that if the contractor is, in their own opinion, restricted in properly executing contractual performance, the contractor must promptly notify the employer in writing. If the contractor fails to do so, the contractor is entitled to require that the above obstacles are taken into account only when this situation and its effects became 'known' to the employer. If either of the parties is responsible for the obstacle, the other party is entitled to claim damages. Claims for lost profit may only be made on the basis of intention or gross negligence of the other party.

Under VOB/B, time for completion can only be extended provided that the obstacles hindering the execution of the works emerge. §6 also covers situations where additional time is required because of increased amounts of work, variations and necessary additional performances instructed by the employer but unforeseen by the employer when concluding the contract. Such additional works (e.g. ordered according to §No. 3 VOB/B or necessary according to §1 No. 4 VOB/B) are considered to fall under §6 No. 2 VOB/B, i.e. the contractor has to give notice that they are impeded. The lack of such notice would mean a lapse of claims for an extension of time and damages (except where the obstruction is obvious to the employer).

§7 deals with risk allocation issues. Should, for example, the fully or partially completed works before the employer's acceptance be damaged or destroyed due to a *force majeure* event, war, unrest or under any other circumstances beyond the control of the contractor that could not objectively be avoided, the works already performed shall be charged for in accordance with the contract. Other damages are excluded from any mutual compensation duty. It is worth mentioning that the taking-over procedure under FIDIC forms is not the same as the *Abnahme* under German law which is in fact an acceptance (i.e. performance). There is no defects notification period under German law. After acceptance, the defects liability period begins to run (*inter alia*).

§8 deals with the employer's right to termination, their pre-conditions (grounds and written form) and consequences. The employer may terminate the contract at their own discretion and any time before completion of performance (equivalent to §649 BGB) but, in principle, has to pay the contract price to the contractor. Standard 'reasons' for termination are prescribed for the notice of termination, namely, contractor default, insolvency, and so on, including the employer's right to complete the works themselves or through a third party and to claim the related damages from the contractor after the contract is terminated in this way.

§9 Notice of termination given by the contractor is permissible when the employer fails to act in compliance with the contract, making it thus impossible for the contractor to carry out their performance. For example, if the employer fails to pay on time but only after granting the employer a reasonable extension of time to pay.

§10 deals with the contracting parties' liability for damages incurred by themselves or their vicarious agents against each other and to third parties.

§11 and §12 deal with the validity and rules of contractual penalties regarding acceptance of the works, i.e. the end of the execution/performance stage and the beginning of the liability for defects. The main legal consequence of the acceptance

is that the burden of proof of the existence of defects shifts to the employer, i.e. the contractor needs no longer show that the works are free of defects. Instead, it is up to the employer to prove that the works contain defects at the time of the acceptance, but not known by the employer. If the employer knew of the defects, they may reserve their right of acceptance (§640 para 2 BGB). The risk of loss and damage to works thus passes over to the employer.

§13 specifies the definition of a 'defect', the contractor's obligation to perform the works free of defects, the procedures to be kept by the employer and how claims resulting from defects are regulated. This includes different defect liability periods for different types of work (e.g. construction four years, plant two years). Liability periods start running from acceptance of the works.

§14 deals with invoicing and accounting of the executed works. The items invoiced must be verifiable and supported by relevant documents giving evidence of the type and scope of performance carried out.

§15 determines the rules for billing, acceptance and settlement of work performed on an hourly wages basis if so agreed. Before work on an hourly wages basis can begin, the employer must be notified of it. The contractor shall then submit time sheets for each working day or week as the case may be.

§16 specifies *inter alia* that the payment of interim invoices shall be due within 18 working days. It is further set out that unconditional acceptance of the final payment shall preclude subsequent contractor claims. Furthermore, if the employer fails to pay in time, the contractor may allow reasonable, additional time for the employer. If the employer fails to pay within this additional time either, the contractor shall have a claim (calculated from the expiration of the additional time) for statutory delay interest unless the contractor can prove higher damage due to such delay.

§17 prescribes, in detail, how the employer may secure execution of the works pursuant to the contract and any defect claims.

§18 deals with the disputes to be resolved by a court in the employer's jurisdiction (usually established by the employer's registered address). The parties are free to agree to alternative dispute resolution. No disputes shall authorize the contractor to suspend the works.

VOB/B is prepared for construction contracts where the employer usually engages a designer to deliver the design for the works and to supervise the works. The rules for design works are stipulated only partially in the VOB. The issues of who is to submit the detail design or design variation proposals, when, in what way and to whom as well as the rules for approving/rejecting this documentation are also not dealt with. This problem can be rectified by adjustments, addendums or attachments to the contract.

In terms of time management, the approach of German law is similar to the majority of civil codes. The common attitude is that contracts contain binding interim payments based on milestones. German law also provides rules for penalties. §11 No. 1 VOB/B refers to the respective §§339 – 345 of the BGB which deal with contractual penalties. Penalties for delay are widely used in practice.

13.9.2 VOB limitations

Although VOB/B conditions are widely regarded as fairly balanced, they should only be used in their unchanged form in small or medium construction projects. Large and complex works where the contractor coordinates their subcontractors and is responsible for the design as well as specific activities (such as construction projects under traffic, underground works, and so on) presume significant modifications and adjustments to VOB/B. In doing so, all VOB/B clauses are exposed to significant risk of strict control of content by the courts.

VOB/B also has some limitations. For example, VOB/B is not clear about who is to bear the risks of unforeseeable ground conditions. At the moment, the majority view seems to be that the ground itself is a 'material delivered by the employer' as per §645 BGB. Thus, if such material causes deterioration, destruction or collapse of the works the risk lies with the employer. §644 BGB, on the other hand, imposes the general risk of deterioration, destruction or collapse of the works on the contractor until acceptance except when otherwise agreed upon.

The question, however, remains: What does the contract say about the ground conditions and who bears the risk of unforeseeable ground conditions? The answer to this question depends on the contractually agreed terms and their interpretation (see, for example, BGH, 20.08.2009 VII ZR 205/07, Rz 77).

If, for example, VOB/B is agreed upon, VOB/C applies and the national standard called DIN 18299 – 18325 is to be used. DIN 18300 obliges the employer to give information in the tender documents about *inter alia* the ground conditions, e.g. to rank the ground in the given classification scheme: 1 – 7, 1 is humus, 2 is a fluid/mushy and very difficult to dredge soil, soil of the classes 3 – 5 normally causes no special problems, 6 and 7 are rock, where 7 may even need blasting. The contractor can rely on the given information and, therefore, the risk of additional costs due to unforeseen soil conditions lies with the employer, e.g. when the tender documents state ground classes 3 – 6 and 2 have been found.

Take, for example, the case *OLG Hamm, 17.02.1993 26 U 40/92*. This case dealt with *Bodenklassenfall* (Ground Classification Fall) where ground classes 3 – 5 were stated and 'more difficult ground conditions' were found. In this case, the ground conditions classification provided by the employer indicated classes 3 – 5. This soil classification was not given by a soil expert and no additional questions were raised either by the employer or contractor. The contractor relied on data given by the employer in the terms of reference. Worse conditions than those indicated were encountered and the contractor claimed additional payment. The employer refused to pay but the judge confirmed the contractor's entitlement stating that the contractor could rely on the data in the tender which gave them the basis for the price calculation. Therefore, the contractor was not under a duty to make further inquiry and could price the risk on the basis of the ground classification provided by the employer.

Very often in practice, tender documents provide a soil 'waiver' which in itself expressly states that no guarantee is made for findings outside the exact boreholes

done and, thus, the risk is shifted to the contractor who can control such risk (i.e. has the opportunity and duty to calculate such risk in their bid price). On the other hand, if the soil conditions found are outside the range to be expected from the soil 'waiver' and involve much higher effort and cost for the contractor, courts may hold this exceptional risk was not assumed by the contractor in the contract and that §645 BGB applies, i.e. additional costs have to be borne by the employer.

Generally speaking, every particular situation must be evaluated taking into account the context and circumstances – especially the tender and contract documents.

Just as within the scope of control of content, the courts have also held that if the contractor (in a re-measured contract) is to bear the risk of different ground conditions (without being allowed to claim additional payment), such a clause is invalid. Not only does it unreasonably disadvantage the other party but such a clause shifts not-transparent risk. According to the duty of contract clauses, transparency (*Transparenzgebot*) at §307 BGB or, more specifically, lack of transparency, may also arise from the provision not being clear and comprehensible (Kleine-Möller and Merl, 2009).

13.10 Invalid clauses in German case law

German judges regularly publish lists of invalid clauses. The following are some examples:

1. 'Specifications and drawings were handed over to the contractor only for his information as non-binding propositions; in this respect the contractor takes over the responsibility for the usability and correctness of those documents.' In other words, this clause rolls over errors in the employer's specifications and drawings to the contractor through the contract and is invalid (Vygen, K. and Joussen, E., 2013).
2. 'With the submission of the bid the contractor gives a guarantee that the bid contains everything what is necessary for the completion of the works.' The clause is invalid because such a bid would not be considered transparent (*05.06.1997 – VII ZR 54/96 BauR 1997, 1036, 1038 = NJW-RR 1997, 1513, 1514*).
3. 'The agreed price is fixed and cannot be increased because of any claims' and 'The employer can require additional works from the contractor without additional remuneration if such works are necessary for the completion.' These clauses also lack transparency (*OLG Hamburg, Urt. v. 06.12.1995 – 5 U 215/94, Beschl. v. 05.06.1997 – VII ZR 54/96, ZfBR 1998, 35. 36 f.*).
4. 'The contractor informed himself about the geological and hydrological site conditions and therefore cannot claim additional payment on those grounds.' It is employer's duty to provide information about geological and hydrological site conditions to allow for transparent bid evaluation (Vygen, K. and Joussen, E., 2013).

5. In a re-measurement contract where 'The contract price cannot be higher than the accepted contract amount (bid price).' Such a clause makes no sense. The employer does not know at the time of bid acceptance what works will need to be paid for under the re-measurement contract. Such limitation of price unreasonably disadvantages the other party (*BGH, Urt. v. 14.10.2004 – VII ZR 190/03, BauR 2005, 94, 95 = NJW-RR 2005, 246 f*).
6. A lump sum contract clause stating that 'If the changes in quantity of the works arise, they will be re-measured and invoiced based on rates and prices.' This clause goes against the basic principles of lump sum contracts (Vygen and Joussen, 2013).
7. Unreasonable time-related clauses such as: 'The contractor will start with the performance immediately after having been instructed by the employer; the time for completion is 5 months.' Such clause is invalid due to vagueness. The contractor does not know when performance will start. A clause like this would be valid only if it allows for contractor claims for additional payment which relate to unforeseeable costs associated with the lack of knowledge about the commencement of performance (minimally the adjustments for changes in cost; see *BGH, Urt. v. 10.09.2009 – VII ZR 152/08. BauR 2009, 1901, 1904 = NJW 2010, 522, 524*).
8. 'The contractor gives guarantee for meeting the deadline. The contractor is responsible for all legal and administrative requirements and cost.' The contractor could potentially be responsible for delays caused by third parties such as state authorities. This is an unreasonable disadvantage (Vygen, K. and Joussen, E., 2013).
9. A clause is invalid for the same reason as (8) above if states that: 'A suspension for more than 3 months does not entitle the contractor to terminate the contract or submit claims nor compensate damages.'
10. 'The taking-over through employer's use of the works is excluded (the employer reserves the date of taking-over the works to be announced by his site manager without foreseeing a period of time for it).' It is impossible to be sure when taking-over will take place and therefore this clause gives an unreasonable advantage to the employer (Vygen, K. and Joussen, E., 2013).

The standard forms of construction contract in Australia by John Sharkey (Australia)

The history of Australian standard forms of construction contract is best understood by reference to the English standard forms. For most of the twentieth century the majority of the forms in use in Australia were direct descendants of well-known English forms and two streams were discernible: a building stream derived from the RIBA forms and a civil stream derived from the ICE forms.

In what was known as the Edition series The Master Builders Association of Australia and the then Royal Australian Institute of Architects published forms for use on building construction

projects where an architect performed the functions of superintendent. The forms were derivatives of the RIBA forms and employed a similar risk profile and similar language.

Publication of the Edition series came to an end in the early 1980s when the Building Owners and Managers Association of Australia Ltd (BOMA) joined with the builders and architects to commence publication of the JCC series of forms. In 1998, BOMA, as the Property Council of Australia, went its own way with the publication of the PC 1 form. The most significant change that PC 1 introduced to the industry was the concept of the superintendent, or as the form called him/her, the contract administrator, performing all functions under the contract as the agent of the owner, and not as an independent certifier, assessor or valuer.

In competition with PC 1, the builders and architects commenced publication in 2003 of the Australian Building Industry Contract, or ABIC, form retaining the traditional function of the superintending architect as independent agent, and not the agent of the owner, where he/she acted as assessor, valuer or certifier.

Current usage of Australian standard forms

While PC 1 and the ABIC forms continue in use, the forms published by Standards Australia (SA) now dominate the market for all types of construction works. The SA forms were originally intended for projects of an engineering nature and for several decades ran as a series in parallel with the above-mentioned building forms. However, and despite being somewhat dated, the SA forms and particularly AS 2124 and AS 4000 (construct only) and AS 4300 and AS 4902 (design and construct), remain the preferred starting point for the majority of those charged with drafting a suitable construction and engineering contract.

AS 2124 and its earlier iterations were based on the ICE forms, even employing the same clause numbering. Clause 12 of AS 2124, for example, is the latent conditions clause. However, Australian courts often developed their own responses to problems that were identified when the forms came before them for judicial consideration.

Some Australian solutions

Thus when the High Court of Australia in *Carr v J A Berriman Pty Ltd* (1952) 89 CLR 327 characterized as repudiatory an owner's conduct which included failing to give possession of the site by the date agreed in the contract, the drafters amended the standard forms to have parties expressly agree that delay in giving possession of the site would not constitute a breach of contract. (See, e.g., Clause 24.1 of AS 4000.)

When the superintendent's tardiness in determining upon the contractor's extension of time claims in *MacMahon Constructions Pty Ltd v Crestwood Estates* [1971] WAR 162 resulted in the loss of any claim by the owner for liquidated damages for delay, the drafters amended the CA 24.1 form in 1964 so as to empower the superintendent to grant the contractor an extension of time at any time up to the issue of the final certificate (See, e.g. Clause 34.5 of AS 4000.) That step has led to considerable litigation and debates about the ambit of the power and whether, considered in the context of other contractual provisions and taking the contract as a whole, the power can effectively amount to an obligation to extend time in an appropriate case (See *Peninsula Balmain Pty Ltd v Abigroup Contractors Pty Ltd [2002] NSWCA 211; 620 Collins Street Pty Ltd v Abigroup Contractors Pty Ltd (No.2)[2006] VSC 491*.).

Extensions of time in the SA forms

Over the years SA has attempted, not entirely successfully , to wean users off the AS 2124/AS 4300 forms and onto the later AS 4000/AS 4902 series and the experience has said something about the simple importance to users of familiarity in the choice of standard form.

By far, the most controversial aspect of the AS 4000/AS4902 series is its discarding of the traditional approach to extensions of time where ordinarily a form will list the events which qualify for an extension. Rather, the approach taken by AS 4000/AS 4902 is to allow the contractor extensions of time for any event except the contractor's breach or omission, industrial conditions or inclement weather occurring after the date for practical completion and such events as the parties expressly agree are excluded. (See definition of 'qualifying cause of delay' in Clause 1.) The approach demands particular care from lawyers and contract administrators and poses difficulties for the lazy and the careless.

The approach to dispute resolution

The approach to dispute resolution by the Australian standard forms is, generally speaking, a traditional one with little or no embrace of such modern techniques as professional or non-binding determinations, expert determination, early neutral evaluation or dispute boards. The model adopted by the SA forms can generally be described as a process of notice followed by executive meeting with litigation or arbitration to follow if a final determination is needed.

Perhaps more in tune with contemporary thinking about dispute resolution are the PC 1 and ABIC forms. Before any final determination by arbitration PC 1 allows for expert determination of disputes concerning directions of the contract administrator (*Cl.15*).The ABIC forms invite the parties to have a conversation about such matters as mediation, expert determination and arbitration.

Amendment

The use of the Australian standard forms in their unamended state is rare to the point of non-existent. The afore-mentioned SA forms, while enjoying the largest share of the Australian market for standard forms, predate major legislative changes in the country such as, proportionate liability, security of payment and occupational health and safety. So significant drafting amendment is inevitable, irrespective of one's views about the suitability of a particular form's risk profile.

Amendment to alter the risk profile of the forms, invariably by shifting risk to the services provider, is commonplace. An SA form is the product of work by an SA committee whose members are drawn from a broad range of industry interests.The inevitable,while understandable, compromises within the committees produce a risk profile in the forms that is invariably viewed by an owner as unsatisfactory when the context is project-specific. One accordingly sees risk regularly shifted to the contractor by amendment to the forms, especially in connection with such matters as extensions of time, latent conditions and time bars.

It is thus timely that SA should presently be undertaking a review with the objective of producing a new set of forms that will, at the least, address some of the issues flowing from the legislative changes the twenty-first century has brought. It is another question entirely whether as a result of the review we shall see much change to the risk profiles of the SA forms that practitioners and industry players have become accustomed to.

International forms in Australia

It is fair to say that the forms European lawyers are more familiar with have received little acceptance in Australia. The NEC form is practically unknown in the country. FIDIC has received more sightings, largely as a result of European contractors bringing their expertise and practices to the energy sector in areas such as Western Australia, but remains a form of rare take-up in the country.

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14 Risk and Insurance

14.1 Insurance in construction

One of the first, clear definitions of insurance principles was formulated by the *English Insurance Act* (1601). According to its drafters, insurance was intended to meet the following primary functions:

- to distribute individual loss across many;
- to encourage individuals to take a risk by promising them compensation in case of loss; and
- to motivate young people to become entrepreneurial.

The large number of restoration programmes that followed the devastation of the world wars (going hand in hand with the rapid development of manufacturing processes) resulted in a consolidation of the risk management principles of responsibility, liability and indemnity. Consequently, it was at this point in history that insurance became recognized as an important need in the construction industry.

Construction insurance covers all indemnity agreements within the limits of individual construction activities where insurance is selected as a risk (liability) assignment instrument. The following are the main types of insurances relevant to construction projects:

- political risk insurance;
- exchange risk insurance;
- bank guarantee insurance (guarantee for bid, performance, advance payment);
- lost profit insurance;
- construction all risk insurance;
- erection all risk insurance;
- professional liability insurance;
- employer's liability insurance;
- public liability insurance.

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Within construction projects, risks are usually allocated by the two most important contracts – the contract between the employer and the service provider (contract administrator, designer, and so on), and the contract between the employer and the contractor.

Insurance costs have escalated so much in recent years that they have become one of the most important cost items of a construction project. Construction project participants must, therefore, understand risk management issues, in particular, risk allocation and insurance. Insurance is widely recommended to protect the contracting parties against the financial implications of unexpected losses, damage or liability. The primary participant (i.e. the employer) usually requires of the secondary party (parties) (i.e. the contractor, designer, consulting engineer as a contract administrator and so on) to be insured against risks in connection with their role and activities. Therefore, a primary party is not then necessarily a direct party to the insurance contract.

The level of the insured amount shall be determined on an estimate of the potential damage the other participants can cause to this party by their activity or inactivity. Potential damage also depends on the nature and duration of the contract, the place where realization takes place and on other circumstances (risks).

14.2 Commercial risk, risk of damage and exceptional risk

When analysing individual construction project risks and their likely nature, we can distinguish between two main categories. The first contains the hazards and risks leading to injuries, death and physical damage, such as defective materials, floods and work-related accidents. The second comprises hazards and risks giving rise to financial losses and delay, such as late site hand-over, delayed instructions and variations.

The above categories further differ because the former (i.e. physical risks) are insurable risks and the latter (i.e. non-physical risks) are not insurable. These categories are handled in different ways even within the standard forms of contract that normally regulate the issues of insurance. The first category is typically dealt with by a separate, specific chapter in the contract. The second category is usually 'spread across' the entire contract with basic employer's risks typically specified in one section.

The question still remains: who is to bear the risk, which is not expressly allocated to one of the parties? The answer is that the party bearing such risk depends on the particular wording of the contract and/or on the governing law.

FIDIC forms in the 1999 First Edition did not solve this problem. FIDIC DBO, published in 2008, contains a significant update of mentioned risk and insurance provisions. The clauses have been restructured in a more logical sequence matching the natural flow from risk allocation to responsibility to liability to insurance. Furthermore, the risks carried by both the employer and the contractor have been identified and allocated and different types of risks have been identified as the commercial risk (risk which results in financial loss and/or time loss for either party where insurance is not generally or commercially available) and risk of damage (risk which results in physical loss or damage to the works or other property belonging to either party, other than a commercial risk).

'Exceptional risks' were established to replace the *force majeure* that is preserved under the term 'exceptional event' (FIDIC, 2011a).

Other risks such as *The Employer's Risks during the Design-Build Period* are found at Sub-Clause 17.1 and read as follows:

> Subject to the provisions of Sub-Clause 17.8 [Limitation of Liability], the risks allocated to the employer and for which the employer is liable during the design-build period are divided into:
>
> (a) The employer's commercial risks, which are:
> (i) the financial loss, delay or damage allocated to the employer under the contract or for which the employer is liable by law, unless otherwise modified under the contract;
> (ii) the right of the employer to construct the works or any part thereof on, over, under, in or through the site;
> (iii) the use or occupation of the site by the works or any part thereof, or for the purpose of design, construction or completion of the Works other than the abusive or wrongful use by the contractor; and the use or occupation by the employer of any part of the permanent works, except as may be specified in the contract; and
> (b) The employer's risks of damage, which are:
> (i) damage due to any interference, whether temporary or permanent, with any right of way, light, air, water or other easement (other than that resulting from the contractor's method of construction) which is the unavoidable result of the construction of the works in accordance with the contract;
> (ii) fault, error, defect or omission in any element of the design of the works by the employer or which may be contained in the employer's requirements, other than design carried out by the contractor pursuant to his obligations under the contract;
> (iii) any operation of the forces of nature (other than those allocated to the contractor in the contract data) against which an experienced contractor could not reasonably have been expected to have taken adequate preventative precautions; and
> (c) The exceptional risks under Clause 18 [Exceptional Risks].

The biggest difference is in the new wording of Sub-Clause 17.2, where 'The Contractor's Risks during the Design-Build Period' are stated as follows:

> Subject to the provisions of Sub-Clause 17.8 [Limitation of Liability], the risks allocated to the contractor and for which the contractor is liable during the design-build period are all the risks other than those listed under Sub-Clause 17.1 [The Employer's Risks during the Design-Build Period], including the care of both the works and the goods.

Exceptional risks are defined in Sub-Clause 18.1 which reads:

> An exceptional risk is a risk arising from an Exceptional Event which includes, but is not limited to:
>
> (a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies;
> (b) rebellion, terrorism, revolution, insurrection, military or usurped power, or civil war, within the country;
> (c) riot, commotion or disorder within the country by persons other than the contractor's personnel and other employees of the contractor and subcontractors;
> (d) strike or lockout not solely involving the contractor's personnel and other employees of the contractor and subcontractors;
> (e) munitions of war, explosive materials, ionising radiation or contamination by radio-activity, within the country, except as may be attributable to the contractor's use of such munitions, explosives, radiation or radio-activity; and
> (f) natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity which are unforeseeable or against which an experienced contractor could not reasonably have been expected to have taken adequate preventative precautions.

The list is not exhaustive and the contractor may claim that an event gave rise to an exceptional risk allocated to the employer under Sub-Clause 18.1 if the contractor considers that an event has occurred which falls within following definition (Sub-Clause 1.1.37):

> 'Exceptional Event' means an event or circumstance which is (a) beyond a party's control; (b) which the party could not reasonably have provided against before entering into the contract; (c) which having arisen, such party could not reasonably have avoided or overcome; and (d) which is not substantially attributable to the other party.

The reasons that these exceptional risks are allocated to the employer include the fact that they are the initiator, ultimate user and beneficiary of the project. Furthermore, it would be extremely difficult for the contractor to price such a risk if they were required to bear it. Moreover, the likelihood of such risks arising is small and it is better for the employer to absorb the costs of such risks if and when they occur, rather than ask the contractor to include it in the contract price and be responsible for them (FIDIC, 2011a).

The following risks can be categorized as belonging to the first category. That is, hazards and risks that lead to injury, death and/or physical damage:

- insurable risks that are required to be insured on the basis of a contractual agreement;
- insurable risks that are not required to be insured on the basis of a contractual agreement; and
- non-insurable risks.

The insurable risks that are required to be insured on the basis of a contractual agreement are most frequently covered by the contractor's comprehensive insurance policy, construction all-risk insurance, public liability insurance, professional liability insurance or contractor's and employer's liability insurance (for employee workplace-related accidents).

Insurable risks that are not required to be insured on the basis of a contractual agreement are most frequently the subject of a contractor's, consulting engineer's and designer's professional liability insurance and employer's liability insurance.

Non-insurable risks are the contractor's or employer's responsibility, depending on their allocation.

Weather risk in offshore wind construction contracts by Alex Blomfield (UK)

Adverse weather constitutes one of the main risks in any construction project. This risk comes to the fore even more in offshore wind projects, particularly as such projects are built increasingly further from shore and in increasingly deeper waters. Severe weather conditions, including high waves, strong and turbulent sea currents and tides and strong variable winds have the potential to significantly disrupt the construction and installation of offshore wind components, particularly given the limited weather window often available to deploy massive components to site, and install, test and commission them. Managing such weather conditions and dealing with the difficulties they cause for transportation, installation, testing, commissioning and the logistics of offshore wind project construction in general constitute one of the greatest challenges involved in delivering offshore wind projects on time and on budget.

The difficulty of managing adverse weather risk in offshore wind construction is exacerbated by the industry preference to deliver projects using a multi-contract rather than an EPC-wrap approach. The multiple contracts in place with the various stakeholders, such as vessel operators and suppliers and installers of foundations, wind turbines, cables and other electrical parts and substations, often make it the case that one party's delay will cause serious delay to other parties. For example, if a vessel has been reserved for a particular time slot, and bad weather prevents work from being carried out during that period, it may be some time before another slot for that vessel can be reserved. Furthermore, variations in the weather tolerances of different vessels and the windows of good weather required for different scopes of work can create major challenges for the scheduling of installation that requires multiple vessels.

Weather risks need to be quantified at the time when the contract is negotiated and the risk allocated to the appropriate project participants at the various stages of the project. This requires careful due diligence, planning and legal drafting tailored to the particular weather risks and remuneration mechanism of each contract. Contractors who have not adequately protected themselves contractually may suffer the consequences of adverse weather through a reduction in their profit margin or, worse still, through the payment of liquidated damages and/or increased labour and other costs arising from the disruption to the works. Project finance lenders will also require a higher level of contingency funding and sponsor support in projects where their technical advisors assess a higher adverse weather risk.

No single standard form construction contract exists for the offshore wind sector. To date, BIMCO, LOGIC and FIDIC construction contract forms have proved popular in the European offshore wind market.

Under the BIMCO Supplytime 2005 form, payment for vessel hire continues irrespective of delays or stoppages caused by adverse weather conditions. However, if weather conditions are unexpected and exceptionally bad, then a party may be able to claim relief under the *force majeure* provisions. Under the Supplytime form, neither party is liable for any loss, damage or delay if the party invoking *force majeure* is hindered from performing any of its obligations under the charter. However, the party relying on an event of *force majeure* is expected to make all reasonable efforts to minimize or avoid the effect of a *force majeure* event. Furthermore, a *force majeure* event may result in termination, if it prevents the performance of the charter for an extended period.

The FIDIC Conditions of Contract (the Red and Yellow Books) deal with adverse weather risk differently and allow the contractors an extension of time for completion of construction if they suffer a delay caused by 'exceptionally adverse climatic conditions'. However, the contractor has no entitlement to compensation for such conditions, and may even suffer the cost of any acceleration methods designed to mitigate the effects of such delay.

The FIDIC conditions do not define what weather events fall within 'exceptionally adverse climatic conditions' nor is there a universally accepted definition of this term. Parties when negotiating a contract based on the FIDIC conditions are therefore advised to define what constitutes adverse weather conditions as well as the location where the applicable weather measurements are to be taken.

One approach could be to compare actual weather conditions experienced during construction with historical weather data for the site in question. Whether or not this is feasible depends on the availability of historical data. Given that the first offshore wind project in Europe dates back to the early 1990s, the data available to permit a meaningful comparison of current and historical weather information are limited and may not be conclusive. For instance, metmasts, which are used to collect wind data, have only been installed in recent years, thereby limiting the empirical value of such data.

The FIDIC conditions also contain *force majeure* provisions, the definition of which includes natural catastrophes such as earthquakes, hurricanes, typhoons and volcanic activity. Although *force majeure* events do not affect the obligation to make payments to the contractor, the challenge lies in establishing that the adverse weather conditions being experienced are sufficiently serious to constitute natural catastrophes.

The LOGIC General Conditions of Contract 2003 also deal with adverse weather as part of the *force majeure* clause. However, in these conditions, *force majeure* only extends to physical disasters and excludes all other weather conditions regardless of severity. In contrast to the FIDIC conditions, the LOGIC form does not have a general extension of time clause. Instead, the contractor will be held responsible for the timely completion of all work done and will have to notify the company of any proposed or actual stoppages of work and any other matter likely to affect its completion. The LOGIC contract does favour the contractor in so far as it gives the contractor the unilateral right to suspend works 'in the event that suspension is necessary for the proper execution or safety of the work, or persons'.

Unless work is suspended due to contractor default, the LOGIC contract stipulates that the contract shall be adjusted in accordance with the relevant provisions relating to remuneration. Parties will need to take this into consideration and allow for appropriate rates in the event of suspension due to weather-related conditions.

None of the three standard form construction contracts discussed above provides a satisfactory solution as to how to deal with the risk of delay and disruption caused by adverse weather. This means that parties who use these forms as the basis for their agreements will need to negotiate specific provisions to deal with adverse weather risk and with the impact that adverse weather may have on time and cost incurred during a project. These provisions will need to be tailored to the specific project and the parties may need to be quite creative to mitigate the potential impact of adverse weather to the project as a whole.

Before entering into negotiations, due diligence should be carried out as to the weather conditions at the relevant site so that the parties can negotiate an approach tailored to those conditions. This would facilitate a better understanding of the potential impact of adverse weather risk at the outset of the project and reduce the risk of significant schedule and/or cost adjustments during the execution of the contract.

An allowance for adverse weather conditions can be built into a construction schedule. However, calculating a realistic allowance can be extremely challenging. Weather data may provide predictions of likely conditions over the course of a fixed period of time. However, each operation may require specific windows of 'good' weather, such as, for example, a specified number of hours to relocate from one location to another, or to install one or more blades on a turbine. At times or locations where weather is particularly changeable, such weather windows may take substantially longer to appear than can be deduced from the mean weather readings.

The potential margins of error in building contingency into a project schedule are huge. Where there are multiple vessels working on an integrated schedule, errors in these calculations are likely to prove costly. Where a contractor contracts on the basis of a lump-sum, fixed schedule contract, it would be prudent to include significant contingency in terms of time and cost to reflect this risk. However, this means that if the weather is favourable, the contractor may receive a considerable windfall and the employer may face substantial wasted costs in terms of the rest of the spread. Employers, therefore, may attempt to carve out adverse weather in general, or some excess of adverse weather, from the lump-sum contract price and include it as a reimbursable element. This enables the project schedule to be calculated against the most realistic projected weather patterns, thereby minimizing the risk of wasted spread costs where the weather follows the projections. This will not cut out all of the fat, however, as the employer will still need to ensure the availability of the spread in case the projections are wrong.

Another consideration is how adverse weather delay should be reflected in the remuneration of a contractor, in particular, in cases where the contractor does not assume the weather risk. This issue is straightforward in the case of day-rate contracts, such as the Supplytime, where each day of adverse weather is compensated at the day rate (or perhaps a reduced rate), as a further day of hire. For lump sum contract where instalments of a lump sum are paid against specified milestones, the picture is more complicated. In such cases, the contractor may risk liquidity issues where completion of the relevant milestones is delayed due to adverse weather. It is possible to solve this issue by including an 'adverse weather day' payment milestone. Another way might be to maintain a minimum monthly payment under the contract in addition to the milestone payments. In the former case, if the period of adverse weather exceeds the stipulated allowance, the contractor will be reimbursed on the basis of the additional 'adverse weather day' milestone.

Contractors will need to be careful to observe any notice or other formal requirements relating to claiming an extension of time due to adverse weather. Daily weather logs should be kept

as well as records of the work which has been affected by weather, the nature and cost of the delay and the steps taken to minimize such delay. These records should be as detailed as possible so as to ensure there is sufficient evidence of the severity of the weather conditions.

Developing a market standard approach to the issue of adverse weather risk in the construction of offshore wind projects should be a priority for the offshore wind sector. However, it is likely that some degree of tailoring would remain necessary to reflect the peculiarities of the individual protects. Nevertheless, all parties would benefit from the reduced negotiation time and increased certainty that this would bring, not least given the complexity of multi-contracting structures for offshore wind projects. However, no amount of clever contractual drafting will eliminate the dramatic impact that adverse weather can have on the timely and on-budget completion of offshore wind projects.

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14.3 Risk management in the standard forms of contract

Associations of professional organizations have created standardized sample forms of contract in order to ensure well-balanced and fair contractual relationships. This form of unification reflects the preferred tendering method based on comparisons of individual contractors' bids to employer unified requirements. A side effect of this is that the provisions of such sample forms of construction contracts concerning risk and insurance are becoming increasingly complex.

The British tradition has had the biggest influence on such sample conditions of international construction contracts. Based on Anglo-Saxon principles, the purpose of the contract is not only to define the scope of work, price and time for completion, but also to allocate the risks the project is exposed to and to establish the way the risks will be treated and managed. The need to insure various aspects of a construction project is tied to the above trend and to the use of the standard forms of contract.

Within most sample conditions of contract, certain risks are usually allocated to one of the parties and the remaining risks belong to the other party. The risks are normally allocated to the party most capable of managing them efficiently. Some of the risks are non-insurable and must be allocated to one of the parties, based on a 'prevailing benefit from participation in the project'.

With the risks identified, they should then be allocated to the individual construction project participants. This allocation should be based on sound evaluation of the participants' interactions and the risks themselves. The most fitting method may be allocation based on the mentioned ability to manage and control an adverse situation and its consequences. However, this may not always work in practice. For example, one of the parties may be optimally equipped to carry out a particular task

but may not be prepared to accept a particular risk. In this case, another approach to risk allocation is appropriate.

Should there be no risk allocation (or if the allocation is incorrect) and adverse events arise causing loss and damage, disputes are sure to occur. The risks should, therefore, be conveniently allocated to the party which has the expertise to control them or to reduce the probability of their occurrence or to mitigate adverse implications of such an event.

If a risk is allocated to one of the parties, this party shall bear the adverse consequences of the respective realiszed risk. Such party, however, may assign these risks to the other party by means of an *indemnity provision*. This other party must then fully trust the indemnified party or stipulate the conditions and requirements the indemnified party must observe.

Take, for example, *construction all-risk insurance* where the insured party (contractor): (1) assigns the adverse liability implications to the insurer (insurance company), which then (2) stipulates the conditions and requirements for the contractor, concerning diligent work practices and mitigation of the potential occurrences and consequences of an adverse event (risk management requirements).

Poor risk management will result in bad risk allocation, damage, losses and disputes. Whenever a proper risk allocation is sought, the allocation must be reasonable, fair (balanced) and efficient. In practice, there is rarely any consensus on what is 'reasonable and fair.' Further criteria should therefore be specified to ensure optimum risk allocation so that best value for invested money can be found.

The following questions need to be raised (Bunni, 2011):

- Which of the parties can best control the events leading to a risk occurrence?
- Which of the parties can best control a risk once it appears?
- What if the employer wants to get engaged in risk control?
- Which of the parties is prepared to bear a risk beyond their control?
- Is the payment for risk transfer reasonable and acceptable?
- Is the party bearing the risk able to bear the consequences of risk realization?
- Can a particular risk transfer from the employer (to another party) lead to a potential transfer of another risk back to the employer (from another party)?

Answers to the above questions will help formulate unambiguous and realistic conditions. These requirements will also assist the contractor to transparently evaluate the bid.

To determine which party ought to bear a particular risk, these further summarized sets of criteria are available (Bunni, 2011):

- Is the party able to control the risk?
- Is a party able to transfer the risk and have the related transfer costs refunded by the other party? (Such an approach is economical and most advantageous to keep the given risk under control).
- Which party has the highest economical benefit from particular risk acceptance?
- Is risk allocation to a particular party beneficial for the construction industry's long-term prosperity?

As such, there are in fact three risk allocation scenarios:

- All the risks to be borne by one of the parties.
- Risk allocation is well balanced.
- Risk allocation is based on specific criteria to be efficient.

The specific criteria of efficient risk allocation are as follows:

- the ability to control a realized risk (to avoid its realization, reduce the probability of its occurrence and to mitigate its consequences);
- the ability to perform a particular activity the risk relates to;
- inability to accept a risk.

14.4 Hazards and risks in construction projects

A construction project is exposed to a large number of hazards and respective risks (Bunni, 2011), related to:

- The time necessary for planning, site inspection, design and construction. Completion of projects often extends across a long time horizon and some phenomena and related hazards can occur repeatedly or on a regular basis within a single project. There are also climatic conditions to contend with such as severe winters, monsoons, and so on.
- The number of people who participate in the project, i.e. those who initiate, prepare, finance, design, provide the supplies of materials and plants, construct, supervise, administer, operate, secure and repair can be enormous. These people usually come from various social classes and from many different countries and cultures in cases of international projects.
- Numerous engineering works are executed in isolated locations with complicated surfaces, often extending across large areas and being exposed to natural hazards with an unforeseeable intensity and frequency.
- New materials and products – not yet proved over time – might be used. Advanced technologies also tend to appear which are necessary for some projects.
- An extensive interaction involving large numbers of companies and individuals with different goals and commitments.

Due to the above, risk management (including insurance risk management) is of great importance in construction projects. The importance of risk management increases two-fold when dealing with large construction projects. Individual risks multiply with the growing size of a project and, frequently, new significant risks appear.

Risks include but are not limited to (Bunni, 2011):

- Lack of experience by construction project participants as a result of a limited number of large projects realised. Moreover, it is complicated to gain and transfer

experience and information because the parties may be against its publication. For example, litigation often takes the form of confidential arbitration as do alternative dispute resolution methods. Insurance and reinsurance companies are not actively communicating or willing to communicate information and experience.

- More institutions will often take part in financing due to the need for extensive funding. It is sometimes impossible to employ private resources as they may be unavailable or insufficient and public resources must therefore be used. Incorporation of public financing will, however, bring additional new risks.
- The impact of even one unsuccessful, large construction project on the contractor's financial position may be devastating. There may also be adverse consequences for other participants and the project as a whole.
- Time for completion of a large project may take several years. Thus, risk occurrence is more likely. Shortening of this time will then bring other, new risks. Once complete, the entire project may become redundant and inefficient due to the availability of new technologies and user requirements.
- A number of specialists are often involved in a large construction project. Their efforts are difficult to unify but they must cooperate on matters such as planning, preparations, engineering, execution, financing, operation, maintenance, securing insurance, and so on.
- Managers must be willing to give their time, sacrifice privacy/personal life and dedicate a significant part of their career to a single, particular project.
- Projects frequently take place in complicated geological and climatic conditions and can extend across vast areas of land.
- Complicated delivery methods are used to execute projects involving a number of contractors, subcontractors, service and material providers, their subcontractors, and so on.
- New technologies appear. These may have to be implemented in practice by thousands of people with inadequate experience in these new technologies.

Individual hazards then give rise to risks that can be divided into the following categories of hazards and risks and their sources (Bunni, 2011).

14.4.1 Project preparation risks

- Employer's selection of the contract administrator and consultants.
- Employer's requirements for the contract administrator and consultants.
- Selection of the site.
- Adequacy of site surveys and inspections (including underground sections).
- Adequacy of financial funds and accuracy of necessary cost estimations.

14.4.2 Design risks

- Improperly selected design documentation in respect of its intended users and society.
- Negligence.

- Technical standards.
- Lack of knowledge, lack of supervision and hasty work.
- Lack of communication.
- Inability to foresee problems.
- Use of unproven technologies.
- Improper use of, and reliance on, software, automatic processes and mechanical and electronic equipment.
- Lack of safety measures.
- Selection of contractor and subcontractor.

14.4.3 Site risks

- Excessive rain.
- Floods and inundations.
- Winds and storms.
- Hurricanes and tornados.
- Subsidence, landslides, rockslides and avalanches.
- Extreme temperatures.
- Cyclones.
- Earthquakes.
- Political, economic, legislative, tax, transport and other risks in connection with the country where project execution takes place.
- *Force majeure*.
- Adverse sub-surface and geological conditions.
- Anthropogenic underground obstacles (power and service utility lines).
- Lack of project acceptance by local population and neighbours.

14.4.4 Execution risks of a technical nature

- Extended duration of the project.
- Technical complexity and innovation in design requiring new methods of construction and/or erection.
- Removal of temporary structures.
- Defective temporary structures and their poor design.
- Dangerous substances and materials.
- Defective design.
- Defective workmanship and materials.
- Lack of supervision.
- Failures and collapse of mechanical and electrical systems.
- Inadequate site management.
- Ground movement.
- Explosions and fire.
- Vibrations and oscillations.
- Corrosion.
- Collapse.
- Collapse of a temporary structure.

14.4.5 Execution risks of an anthropogenic nature

- Human failure.
- Negligence.
- Fraud and other criminal acts.
- Programming of work.
- Lack of communication.
- Failure to ensure compatibility with insurance conditions.
- Riot and commotion.
- Strikes.
- Incompetence.
- Malicious acts.
- Inefficiency and delays.
- Insufficient site supervision.
- Variations in technical specifications.
- Dispute resolution risks.

14.4.6 Post-construction risks

- Security/safety.
- Serviceability.
- Material fatigue.
- Fire and arson.
- *Force majeure*.
- Natural hazards including inefficient remedies.
- Human errors and anthropogenic risks (including vandalism).
- Risk in connection with making the work fit for intended purpose.
- Project operation risks.
- Wear and tear risks.

14.5 Insurance requirements in standard forms of contract

14.5.1 Insurance requirements in FIDIC forms

The conditions of contract of the *Fédération Internationale des Ingénieurs Conseils* (FIDIC; International Federation of Consulting Engineers) are the most widely used sample conditions of contract in international construction projects. These sample forms are now perceived as international best practice documents and their popularity is ever growing. This is thanks to international employers and lenders wanting reliable and proven 'rules of game' for their construction projects. Three basic forms (1999 version) are now most frequently used for delivery of construction works (including the design and plant). In particular:

- Conditions of Contract for Construction (CONS/1999 Red Book);

- Conditions of Contract for Plant and Design-Build (P&DB/1999 Yellow Book);
- Conditions of Contract for EPC/Turnkey Projects (EPC/1999 Silver Book).

As foreseen by FIDIC, there is risk inherent in every construction project. Therefore, the risk should be insured to the greatest extent possible.

In the case of CONS, they follow similar general insurance conditions as applicable to P&DB and EPC. With P&DB and EPC (and/or CONS), the employer or the governing law will often require that the contractors themselves or their subcontractors have professional liability insurance cover as a precondition to the contractor designing a part of the work. These requirements should be described in the tender documentation for the contract. The scope of the contractor's compulsory insurance will cover the design risks where P&DB and EPC are to be used.

Design risk and insurance

Liability and insurance problems that relate to designer responsibilities and defective design appear worldwide. It is widely assumed that if a product or material is selected as built in, then the party responsible for its selection is, to an extent, protected by the manufacturer's warranty or insurance. Concerning design documentation, the designer will not provide such a warranty and the designer's professional liability insurance is not based on the fitness-for-purpose liability principle. Even when not covered by any designer warranty or by indemnification promise given by an insurance company *per se*, the contractors are responsible for such defects where the preparation of the design is one of their contractual obligations.

Designers, in general, lack the resources to be able to underwrite the risks a design error may cause to a large construction project, to other participants and to society at large. Professional liability insurance providers will then refuse to insure the designer's fitness-for-purpose liability, arguing non-insurability on the basis that they go against insurance principles. The contractors will then, naturally, argue that their liability should only be of the due-skill-and-care type. Actual contractor and designer liabilities will then depend on a particular contract and governing law.

FIDIC DBO Sub-Clause 17.9 reads that:

> The contractor shall also indemnify the employer against all errors in the contractor's design of the works and other professional services which result in the works not being fit for purpose or result in any loss and/or damage for the employer.

General insurance requirements

General requirements for insurance are defined in Clause 18 of the above forms. At Clause 18, 'insuring party' means, for each type of insurance, the party responsible for effecting and maintaining the insurance specified in the relevant Sub-Clause. Sub-Clause 18.1 reads that whenever the contractor is the insuring party, each insurance policy shall be effected with insurers on terms approved by the employer.

Furthermore, whenever the employer is the insuring party, each insurance policy shall be entered into with insurers on terms consistent with the details as stated in the particular conditions.

Insurance for works and contractor's equipment

As required by FIDIC forms, the insuring party shall insure the works, plant, materials and contractor's documents for not less than the full replacement cost (including costs of demolition), removal of debris, professional fees and lost profit. The insuring party shall maintain this insurance until the date of the taking-over certificate. This insurance is to be effected and maintained by the contractor as an insuring party.

Insurance against injury of persons and damage to property

Concerning the definition of 'insurance against injury of persons and damage to property':

> The insuring party shall insure against each party's liability for any loss, damage, death or bodily injury which may occur to any physical property (except things insured under Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment]) or to any person (except persons insured under Sub-Clause 18.4 [Insurance for Contractor's Personnel]), which may arise out of the contractor's performance of the contract and occurring before the issue of the performance certificate.

This insurance can have a minimum guaranteed amount per occurrence with no limit on the number of occurrences.

The insurance shall also be effected and maintained by the contractor as the insuring party. Even here, however, an optional liability limit may sometimes be determined.

Insurance for contractor's personnel

Under Sub-Clause 18.4:

> The contractor shall effect and maintain insurance against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness, disease or death of any person employed by the contractor or any other of the contractor's personnel.

The employer and the engineer shall also be indemnified under the policy of insurance, except that this insurance may exclude losses and claims to the extent that they arise from any act or neglect of the employer or of the employer's personnel.

As such, the FIDIC forms require the contracting parties to have three insurance policies:

- *Property insurance* to cover damage to works and on-site property, being realized in practice as the contractor's construction all risk insurance (CAR).
- *Liability insurance* that protects the employer and the contractor against statutory liability for injury, disease and death of contractor personnel occurring in the scope of their performance in a construction project. This insurance is executed via *employer's liability insurance*.

- *Liability insurance* that protects the employer and the contractor against statutory liability for injuries, disease and death of third parties and against damage to third party property in connection with the contractor's activities in a construction project. This insurance is executed via *public liability insurance*.

Such insurances are negotiated on a project-by-project or yearly basis in cases of projects with long time horizons for completion. Coverage can be broken down into three individual insurance contracts or take the form of one composite contract.

Insurance in hydroenergy projects by Alex Blomfield (UK)

International hydropower construction contracts usually require one or both of the Parties to take out at least the following three types of insurance:

1. property insurance, covering transport & equipment while on site;
2. liability insurance, covering damage to third party's property or death or injury caused by the insuring party; and
3. Workmen's compensation and/or Employer's liability insurance, at a level customary or statutorily required for the country of the Project or in accordance with the Employer's minimum requirements.

The conditions of contract (Clause 18 in a FIDIC contract) will specify general requirements for such insurances, and an insurance annex will specify more detail with respect to such requirements, including minimum ratings (e.g. Standard & Poors 'A-') and insured parties, coverage/conditions, period, sum insured and deductibles for each category of insurance. The insured parties will include the contractor, the employer, the engineer (if applicable) and subcontractors at any tier and, in a project-financed deal, the Lenders. The cover shall apply separately to each insured as though a separate policy had been issued which, in relation to liability policies, shall include the ability to make cross-suites with no exclusions. The Employer, together with its insurance adviser/broker, will initially decide the coverage and conditions, period of insurance, sum insured and deductibles for each insurance and assist in placing in the insurances. However, the Lenders' insurance adviser will review all insurance requirements, in particular, the insurance requirements for the Employer. As part of the dialogue on appropriate levels of insurance, the Employer may also need to correct a common misconception in the construction industry that simply referring to a required quantum of insurance in a contract does not cap liability at that level.

Contractors may need to take out project-specific insurances to meet the project-finance requirements such as insured parties, cross-liability and waiver of subrogation, which can delay the occurrence of the commencement date on a construction contract if that contractor had previously assumed it could rely on its group company insurance policies which often do not meet such requirements. A lack of familiarity with local fronting requirements, considered together with minimum rating requirements for the insurers, may also cause a delay to the occurrence of the commencement date as the employer may need to enter into a waiver with the Contractor and a separate waiver with its lenders to deviate from such minimum rating requirements. An employer can mitigate against this potential delay by properly conducting due diligence on the local insurance market and requesting draft insurance certificates from the contractor at

the tender stage. This allows the employer to enter into a dialogue with the contractor's insurance adviser to ensure that it has compliant insurances before the delivery of insurance policies required as a condition precedent to commencement date.

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14.6 Practical aspects of insurance in construction projects

Insurance of large construction projects is an integral part of the project itself or of its execution. The employer and the contractor are capable and willing to bear the financial risks in connection with unexpected damage during construction, but only to a certain extent. The admissible sum (called the excess) tends to be set just at this 'limit' and the parties then may assign their risks for extra payment if such risks exceed this 'limit'.

Troubles and 'incompatibility' tend to appear in practice because two quite different industries and practices meet here. The first is the purely technical field of construction projects, and the other is the field of law (finance and civil law), represented by insurance. This can give rise to a communication barrier where the insurance experts do not fully understand the technical aspects of the works and its execution, and where the construction specialists, on the other hand, tend to underestimate the insurance aspects (or allow for such aspects, burdened by technical and managerial duties).

14.6.1 Recommendations for negotiating insurance

An insurance contract is, in principle, based on the Anglo-Saxon doctrine of *utmost good faith*. It is a principle of utmost good faith that an insured will provide the insurer with complete and true information of the risk and the insurer will then sell the promise of the circumstances under which they shall indemnify. As such, the contractual relationship is based on mutual trust between the contracting parties.

Two basic conditions must be stressed and detailed:

- the duty to inform the insurer of what is relevant in terms of the insurance; and
- the duty to adhere to the conditions under which the contract has been entered into.

The employer's intention must be defined at the beginning. For example, defining their purpose, location, design, financial amounts, time for completion and other parameters shapes the initial skeleton of the insurance policy. The insurance issue must be considered at the design preparation phase at the very latest.

An insurance specialist, whether an in-house employee (of the employer) or, more frequently, an insurance broker ('broker'), plays an indispensable role here. Experience shows that it is always better when a well-experienced and assertive broker takes over this role in cases of large construction projects. The broker ought to be a dignified, competent and respectful partner to the insurers at the local or, better yet, international insurance and reinsurance market level. The requirements (on the basis of which an optimum insurance contract can be compiled) have to be put together for this specialist. Of course, these requirements will include all the relevant, underlying documents to be provided, as they relate to the intended works. Moreover, they must include partial documentation such as that in support of geological surveying and the report prepared by a hydrologist, for example. Finding an external broker may be done through a tender process.

The first output of the broker's efforts will be a risk report he/she submits to the insurers along with a request for preparation of the respective insurance bids. The employer (and also the contractor if known at this stage) must, prior to submission of the report to the insurers, make themselves familiar with this report and find out if their requirements are met and if the information contained in it is correct and current.

With bids from potential insurers obtained, the broker must prepare a written, detailed analysis of the bids submitted by the insurers. This analysis will contain detailed comparisons regarding the level of premiums, insurance cover ranges and various limitations imposed by the insurer on the constructed work. Limitations and additional conditions that are not normally included in the insurance conditions are included in various special clauses.

For example, the standard practice of the Munich Reinsurance Company is to include tens of such additional clauses in its construction all risk insurance policies. These clauses deal with, for example, limitations and exclusions in tunnelling and underground works, reservoirs, dams and damage to existing underground pipelines and cable lines. Routine checking and revision of the insured sum and its correctness are essential.

Due to various limitations and conditions, analysis of insurance bids should be made subject to the objections and suggestions given by the employer and respective contractors. This should include an estimation of any risks and costs of the measures to be taken at the insurer's request. All these underlying documents must identify the person who has prepared them and to whom they have been handed over.

The broker must have professional liability insurance in the event of a mistake or negligent conduct on their part. This obligation is usually assigned to the broker by operation of law.

14.6.2 Compatibility of the construction contract with the insurance contract

At the conclusion of the tender, the broker must ensure compatibility of the insurance contract with the work being constructed. A contingency plan (with insurance as its integral part) should be prepared for large construction projects. This plan must address the protocols to be followed in case of potential damage.

All managers must be made fully aware of the actual cover of the insurance contract. This includes top management of the employer and contractors right down to the level of site managers.

A list of the insurance contract parameters extracted from the insurance contract should also be prepared. This will allow the parties to quickly and accurately identify any works/activities which may breach, deviate from or be incompatible with what is actually insured. This is of critical importance because, in any construction project, there will almost certainly be deviations in terms of the time horizon of the work, changes in technology employed, and so on. All of this can be incorporated into a single manual tailored for a respective insured project. All levels of management (including site managers) should be made familiar with this manual.

A particular procedure has to be defined, should a deviation appear. It is mainly up to the broker to evaluate the deviation and determine (and then notify) whether it is enough to inform the insurer about new circumstances or to resolve the matter via an addendum to the insurance contract. The principle of utmost good faith applies when informing the insurer about new, relevant facts. Usually these facts relate to information upon which the insurance has been effected.

As a matter of good practice, site documents such as daily logs, time programmes, progress reports and taking-over protocols have to be properly kept.

The broker should, ideally, be present at the on-site progress meetings and regularly review relevant documents, for example, reviewing and checking design documentation of the project to ensure that it respects the requirements of the insurance contract. This may include issues dealing with the installation and operable condition of pumps used to drain water from a foundation pit in the capacity as prescribed, or the adequacy and operability of anti-flood barriers required by the insurer.

The procedure to be performed in response to potential damage subject to insurance must be clearly spelt out and communicated as well. The broker is best able to determine which situations and/or damage should be reported to the insurer. However, the contractor must set up the system of communication so that the broker is made aware of such situations on a timely basis and has the opportunity to respond accordingly. A raised claim may also include expenses incurred in avoiding damage.

Construction all risk insurance ranks among the most complicated kind and the role of an insurance specialist is critical here. Cooperation does not end at the signing of the insurance policy – the specialist should provide their client with relevant after-sales support throughout the execution of the works and over duration of the insurance contract.

Incompatibility of the construction contract with the insurance contract by Karel Fabich (the Czech Republic)

Unfortunately, not even simple things are actually simple in practice. I am now involved in liquidating two cases of damages in a construction project before it is handed over to the employer, i.e. while the contractor is still responsible for them. Being a medium to large enterprise, the contractor has an insurance contract in place for the works under construction. The works are automatically included in the comprehensive insurance contract when they meet certain conditions. A premium is then paid to complete a straightforward insurance process.

Working according to schedule, the contractor is building conscientiously on a river bank and the river bed. In my opinion, the contractor cannot be making much of a profit in these times of strong competition and price-cutting. The contractor does seem to care much about the compatibility of its insurance contract with the works under construction. It is written in the insurance contract that any construction works taking place close to rivers (as predefined) have to be made known to the insurer in advance. But the insured contractor fails to announce anything and the insurance broker is oblivious to the situation. It is the height of the construction season and there are other things to worry about after all.

A rain shower and what a pity! Flooding damages reach between 3 – 5% of the total contract value. I assume the contractor to be without profit and remuneration – or even suffering a loss if the insurer refuses to pay on the basis of breach of contract conditions. Two simple emails might have been enough to save the day – one to the broker and the other to the insurer.

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14.7 International insurance law and insurance standards in the construction industry

Currently, there is no insurance standard in the construction industry applicable worldwide. International insurance is fragmented but some uniformity is reflected in the terms and conditions used by the biggest and most renowned insurance companies and/or their associations. The following paragraphs will turn attention to two groups of general insurance terms used by German insurance companies. The first set of terms are the provisions of the General Terms for Construction Insurance of The Association of the German Insurance Industry. In particular, the *General Terms for Construction Insurance Agreed with Employer* and the relevant interpretation clauses (TK ABN 2011) (ABN) and the *General Terms for Construction Insurance Agreed with Contractor*, including the relevant interpretation clauses (TK ABU 2011) (ABU) will be analysed.

Second, the chapter will deal with the standard forms, terms, and clauses prepared by the International Association of Engineering Insurers (IAEI). The IAEI currently has a membership of 20 countries. The IAEI has created two sets of insurance terms, both used in construction; see: http://imia.com/munichre_examples.php#220. The terms include *Construction All Risk Standard Insurance* (CAR) and the *Erection All Risk Standard Insurance* (EAR). To avoid confusion, the abbreviations of CAR and EAR mean conditions prepared by IAEI unless otherwise stated.

14.7.1 Standard insurance terms of ABN 2011 and ABU 2011

The most recent editions of the ABN and ABU conditions are dated 1 January 2011. Both ABN and ABU are consistently interlinked with the *Verdingungsordnung für*

Bauleistungen (VOB) construction contract procurement regulations. Construction risks insurance mainly includes the insurance of construction works and building materials. The purpose of ABU insurance is to protect the contractor from the necessity to re-build works at their own expense, should they suffer destruction or damage in the course of construction. Under ABN terms, insurance will provide the employer with protection against the necessity to pay the costs of the re-build of a building that has been destroyed or damaged by an incident. The first notable difference between ABU and ABN terms is the party insured against risk (ABU – contractor, ABN – employer). There is also another major difference in the scope of insurance. In compliance with § 1 of ABU, all building materials, construction elements and construction works intended to fulfil the purpose of a construction project as defined in the insurance contract (including the temporary works and materials) must be insured. As such, the ABU conditions apply to both construction (reconstruction) of the buildings and construction of civil engineering works (roads, railways, bridges, tunnels, and so on). Paragraph 1 of the ABN conditions only applies to insurance of a newly erected or reconstructed building. Nevertheless, the scope of the subject of insurance can be modified (extended) via insurance clauses by agreement (for example, Clauses TK 5862, 6364, and 6365). If these clauses are agreed upon, the differences between ABN and ABU will actually vanish in respect of defining the scope of the subject of insurance.

The ABU and ABN terms can be subdivided into two parts. The first regulates the issues typical of construction risk insurances only (Section A), and the second defines the general insurance terms (Section B). A brief explanation will be given of both Section A conditions.

Conditions of ABU – Section A

Following the exhaustive list of insured and uninsured items at § 1, Section A of the ABU terms further consists of insured and uninsured risks and damage (§ 2), insurable interests (§ 3), insurance location, (§ 4), insured value, sub-insurance (§ 5), insured and uninsured costs (§ 6), scope of insurance indemnities (§ 7), payment of insurance indemnities and interest on insurance indemnities (§ 8) and expert proceedings (§ 9).

As per § 1 of ABU, the term 'work' means 'any building work at any phase of construction. All the preparatory and temporary works are insured.' ABU falls under the category of all risk insurance, covering nearly all risks except those listed in § 2, sub-sections 2 – 4. The provisions of § 2 of ABU defines damage, subsuming damage or destruction of an insured item under them. This definition, however, does not cover damage caused by a defective method of construction or error in design. Other basic preconditions upon which indemnity can be paid out is unforeseeability of damage occurrence. Damage is unforeseeable if the insured or their representatives (who are professionally skilled in the particular construction process) could not have foreseen it or when caused by gross negligence.

The work can be extra-insured against fire and floods. This leads to the necessity to specify respective terms in the insurance contract. For example, the absence of a definition of 'uncommon and extraordinary levels of water' in § 2, sub-section 2 (b) of ABU is widely criticized by the German literature on the topic. Damage to glass,

metal or plastic materials while they are processed during construction are fully excluded from insurance cover. This does not mean that the exemption applies to damage caused to parts of the building already completed or under the construction. Damage caused by abnormal levels of water in watercourses, strikes and political turmoil are also exempted from insurance cover.

Conditions of ABN – Section A

The main difference between the ABN and ABU conditions is that the employer is the insuring party in the case of ABN. Civil engineering works are widely exempted from insurance cover under ABN. Another difference between ABN and ABU is in the definition of 'insurable interest'. In principle, ABU terms relate to contractor insurable interest. According to § 3 Section 1, the ABN terms – even though applying primarily to an insurable interest of the employer as the insured – cover the insurable interests of all contractors with an insurable interest in execution of the employer's works (including their subcontractors). They are also secondarily covered in accordance with § 3, Section 2 of ABN. As such, additional contractors become co-insured with the employer.

14.7.2 Munich CAR & EAR insurance terms standards

The ABN and ABU insurance terms are rather regional in their nature because they are primarily used to insure construction risks in Germany. The standards of CAR and EAR are also used in international construction projects. The concepts of CAR and EAR come from the Anglo-American insurance model. Prepared by IAEI, CAR and EAR constitute a combination of a contract sample form with insurance terms.

The CARs and EARs consist of a preamble, general conditions, tangible damage cover conditions (Section 1), conditions upon which indemnity can be provided for injury and damage caused to a third party (Section 2) and the conditions upon which indemnity can be provided for lost profit (Section 3). The forms where particular policy-related data can be filled in are attached to the CAR and EAR terms. Like the ABN and ABU: (1) the CAR and EAR standard insurance terms can be modified by means of clauses which allow policy tailoring for a particular insured; and (2) the CAR and EAR terms contain a variety of identical provisions.

CAR terms

The CAR insurance terms are designed for policies entered into between construction contractors and insurers in large (often international) construction projects.

The preamble of CAR insurance terms outlines general exemptions from insurance cover (such as war and civil unrest, nuclear events, deliberate acts of the insured and their representatives and suspension of works). The preamble also defines the start and end points of insurance cover. In general, insurance cover starts with the commencement of construction works or with placing the insured things on the construction site and ends by acceptance of the works or their commissioning.

The general terms outline the insured's notification duties, specification of the official inspection by the insurer and the insured's obligation to promptly repair

damaged things should an insurance event appear. An arbitration clause appears at Paragraph 7 of the General Terms to facilitate quicker settlement of disputes.

Tangible damage is included in comprehensive insurance cover, except for cases specified in Section 1. These exemptions are more extensive than those set out in the EAR terms. Compared to EAR terms, items such as costs for repairing defective materials, wear and tear, corrosion, repair of on-site damage arising from black-outs (including to machinery and plants) and damage to vehicles and watercraft are exempted from insurance cover under CAR terms.

The condition upon which insurance cover can be provided for injury, death or damage caused to a third party is that the event has occurred directly in connection with construction or during the installation of insured things. Here CARs offer identical provisions to EARs.

Concerning the conditions upon which the insurance cover provides for lost profit, CARs are identical to EARs. In the third Section, there is a list of definitions (such as turnover, yearly gross profit) for the purposes of insurance indemnity. This section also contains a series of exemptions and provisions (such as periods of time and their calculation).

EAR terms

The EAR terms have been put together for erection all risk insurance. Deviations are reflected in their CAR counterparts. In addition to the discussion above, the definition of when insurance cover actually ends is critical. Insurance cover will end either after taking-over or after the field tests or load tests are commenced, depending on which comes first. In general, insurance cover will not end later than four weeks after commencement of the first test. Every other agreement must be made, according to EARs, in writing – despite being an excessive provision as the insurance terms can be modified by the parties without the necessity to have such an option expressly stated in them. The end of the insurance cover will be determined as separate for every particular facility or part of the work as gradually commissioned.

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15 Risk in Underground Construction

15.1 Underground construction hazards and risks

Underground construction projects differ from other construction types and are project-specific due to the environments in which the construction takes place. The underground environment is diverse and fewer risks are foreseeable prior to project implementation. The structure of such an underground work is influenced significantly by nature. Rugged geology co-exists with structures built through human efforts. Therefore, a successful outcome can only exist where there is a mutual symbiosis between natural and human factors.

Underground construction contracts must, therefore, anticipate a higher level of risk which can never be fully eliminated. As the work takes place in natural surroundings, the characteristics and behaviour of these surroundings are not always foreseeable. A final prognosis can only be defined during the realization phase.

Geology-related anomalies are ranked among the major hazards, for example, excavation instability. Should the necessary measures not be taken correctly and in time, these instabilities can spread and reach breaking point. Depending on the particular conditions and size of the rock cover, breaking point can result in cave-in phenomena that pose a threat to surface structures above the underground works.

The largest underground construction works are usually tunnels. The following problems are ranked among the main tunnel construction hazards:

- loss of tunnel face stability;
- portal collapse;
- collapse of tunnel ceiling (ground arch) at the heading, resulting potentially in:
  - excessive overbreak;
  - ceiling collapse up to the surface.
- face fall-out on tunnel;
- low stability of tunnel face;
- tunnel bottom growth, lining pervasion into soft subsoil;

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- excessive growth of convergences – tunnel profile squeezing, primary lining deformations;
- excessive ground water inflow into the tunnel;
- sudden water/mud/runny sand breakthrough into the tunnel;
- dangerous gas or radiation bursts into the tunnel from:
  - methane;
  - natural gas from ruptured piping;
  - CO_2.
- occurrence of stray currents;
- excessive surface sinking above the tunnel and related impacts on surface structures, power and service utility lines;
- drawdown, destruction of water wells around the tunnel;
- damage and destruction of water courses near the tunnel by mine water discharges that may have substantially changed their chemistry (for example, concrete extracts);
- damage due to pressure grouting compacting the rock massif or due to anchor grouting (damages to power and service utility lines, surface swelling);
- improperly selected and implemented tunnel insulation and water infiltration into the tunnel.

15.2 Code of practice for risk management of tunnel works

The first national document that deals integrally with how to assess, analyse and control the above risks is *The Joint Code of Practice for Risk Management of Tunnel Works in the UK* issued by the British Tunnelling Society (BTS) in September 2003. A closely related document striving to become internationally renowned is *A Code of Practice for Risk Management of Tunnel Works*, prepared by the International Tunnelling Insurance Group in January 2006 (the Codes). These Codes are not enforceable or legally binding. However, they do contain some important principles which endeavour to make all parties involved take the right approach to risk identification, control and elimination.

The Codes came into being through the cooperation of the Association of British Insurers, Assurance Companies, BTS, the International Tunnelling Association (ITA) and the International Association of Engineering Insurers (IMIA) also in reaction to some of the larger insured accidents that include (in US$): the Great Belt Link Fire (Denmark, 1994, damage $33 million), Munich Metro Collapse (Germany, 1994, damage $4 million), Metro Taipei Collapses (Taiwan, 1994 and 1995, combined total damage $24 million), Metro Los Angeles Collapse (USA, 1995, $9 million), Hull Yorkshire Collapse (UK, 1999, $55 million), TAV Bologna-Florence Collapse (Italy, 1999, damage $9 million), Anatolia Motorway Earthquake (Turkey, 1999, damage $115 million), Metro Taegu Collapse (South Korea, 2000, damage $24 million), TAV Bologna-Florence Collapse (Italy, 2000, damage $12 million), Taiwan High Speed Railway Collapse (Taiwan, 2002, damage $30 million), SOCATOP Paris Collapse (France, 2002, damage $8 million) and the Shanghai Metro Collapse (China, 2003, damage $60 million).

Particular mention will be made of the collapse which took place during the construction of the Heathrow Express Rail Link. On 21 October 1994, the tunnel at Heathrow Airport in London caved in and became one of the most extraordinary construction events of the last quarter century. The collapse caused the cancellation of hundreds of flights, a six-month delay of track commissioning and caused damage totalling more than $141 million. The court ordered a record fine of £1.2 million against the contractor Balfour Beatty plc for endangering the safety of the public and for gross violation of occupational safety. On the supplier of geo-monitoring (the Austrian company, Geoconsult GmbH), the court imposed a fine of £500,000. In addition, the court ordered each company to pay a further £100,000 in legal costs.

Large, insured accidents make tunnel construction more expensive. The Codes, therefore, aim to unify and determine a minimum standard of risk control methodology. The Codes cover all phases of underground construction efforts, i.e. the preparations, engineering, project allocation and implementation. The Codes emphasize the insurers' involvement in the contract. An insurance company is authorized to perform site inspections and require a remedy should discrepancies be found.

The following are among the main principles of the Codes:

- The requirement to submit the Register of Risks. The Register of Risks is an open document (it is possible and desirable to extend it during the course of construction), which clearly defines to whom a risk belongs, how it is to be controlled and how it is to be mitigated. The Register of Risks is a part of a Quality Control System, being, as such, subject to independent audits.
- Use of the 'standard forms of contract' and technical standards.
- The contract should include a risk allocation and sharing clause, concerning geology or unforeseeable physical conditions.
- The contract should include a provision regulating the geo-monitoring process.
- The contract should include a provision allowing variations and implementing value engineering.
- The employer must have sufficient knowledge of geological risk control. If lacking this knowledge on the side of its own staff, they are obliged to hire a consultant or a contractor able to meet this requirement.
- The employer is obliged to invest sufficient funds in geological and hydrogeological surveying. This allows bidders to prepare and price the offer in respect of the known ground conditions and related risks in connection with tunnelling.
- The employer is also obliged to have sufficient funds and time for project preparation.

A project may be deemed 'uninsurable' where the above requirements are not met. This, in itself, is a project commencement obstacle.

15.3 Alternatives of unforeseeable physical conditions risk allocation

Underground construction risk tends to be allocated to contracting parties through standard forms of contract. The risks in connection with unforeseeable ground

conditions are usually borne by the employer and the technology-related risks by the contractor. It is nevertheless important to know the exact wording of the specific conditions or modifications of the standard form within every individual project.

Mere use of any standard contractual conditions will not eliminate unforeseeable risks and lack of proper project preparation. In general, three approaches to unforeseeable (physical conditions) ground conditions risk allocation can be distinguished and are discussed below:

1. *Full risk of ground conditions is borne by the employer*. Given such a risk allocation, the actual costs incurred in connection with the work completion under the encountered ground conditions, agreed headquarters, site overhead costs and lost profits are paid to the contractor regardless of total expenses.
2. *Sharing of ground conditions risks*. Given such a risk allocation, the contractor is compensated for all actual costs incurred (regardless of the total) in connection with work completion and agreed headquarters and site overhead costs. The contractor is not, however, compensated for lost profit in connection with adverse ground conditions encountered if they differ from the expectations spelt out in the terms of reference.
3. *Full risk of ground conditions is borne by the contractor*. Given such a risk allocation, the contractor is not compensated for the actual costs incurred in connection with the work completion, agreed headquarters and site overhead costs and lost profit. This approach is not recommended for underground construction projects.

Where the employer does not invest any funds into geological surveying and risk analyses, the bidders must do so at their own expense, resulting in increased costs in connection with submitting the offer and, inherently, restricting the number of bidders. Bidders must be provided with enough time and space to carry out a site inspection and investigation. In the case of underground projects, only a part of the site is available for inspection. The technology employed in construction may prove unsuitable, should the employer assign all the responsibility to the contractor who, in turn, comes across unforeseeable ground conditions during underground works. In such cases, the economic sustainability of the bid may collapse as a whole.

A contractor bearing the risk of unforeseeable ground conditions is forced to adapt the project and method of construction in line with expected economic returns. In the event of a high level of losses, the contractor will almost certainly look for all possible ways to terminate the contract prematurely. This can impact on the total costs, quality, safety and service life of the entire tunnel (see the recent case of a tunnel construction early termination in Obrascon Huarte Lain SA -v- Her Majesty's Attorney General for Gibraltar [2014] EWHC 1028 (TCC).

15.4 Unforeseeability

It is always difficult to accurately evaluate the nature of ground conditions. In fact, nature of itself is never completely predictable nor are natural events completely foreseeable. This, in itself can give rise to disputes.

The following should be taken into account whenever the foreseeability (or lack of) is to be assessed:

- information generally available at the 'before invitation to bid' stage;
- information provided by the employer (such as geotechnical surveys);
- results of the contractor's own surveys at the bid preparation phase;
- subjective factors, i.e. what a well-experienced 'reasonable' contractor should and could foresee, based on the above information, sources and site investigation.

When an issue as to what was or was not foreseeable is to be decided, the most significant argument, however, is what the contractor had allowed or enabled through their own on-site actions and how they had responded to the resulting situation. In respect of early warning principles, the rule is, therefore, to notify the employer of any unforeseeable conditions at once, whenever they appear, and to coordinate the steps to be taken to eliminate the related risk of non-compliance with the contract.

Another useful tool for analysing what is, and what is not, foreseeable may be a requirement placed upon the bidder to submit (along with their bids) all information and data used during bid preparation. This information will then become available to the other bidders. For example, subsequent surveys performed by the individual bidders and details of expenses incurred in connection with them. Should an unsuccessful bidder (at the preparation phase) assess a particular hazard as foreseeable, the successful bidder cannot claim the same hazard as being unforeseeable. These pieces of information can be considered when variations are to be assessed and the validity of the contractor's claims evaluated. On the employer's side, however, it is always necessary to take all appropriate measures to prevent abuse of any sensitive commercial information.

The regulation of unforeseeability differs between particular jurisdictions. In international construction projects, FIDIC has laid down a standard for dealing with unforeseeability in contracts. Regarding the clear specifics of underground construction projects, FIDIC came to an agreement with the ITA on the preparation of a new sample form of contract to cover tunnelling projects (or underground works in general). Currently, sources are being prepared for assignment and a workgroup is being put together to prepare the model. The FIDIC approach to unforeseeability is described below.

15.5 'Unforeseeability' according to FIDIC forms

In the CONS/1999 Red Book at Sub-Clause 1.1.6.8, the term 'unforeseeable' is defined as 'not reasonably foreseeable by an experienced Contractor by the date for submission of the Tender'. As such, the definition is left general while it is assumed that it will be necessary to evaluate every particular situation on a case-by-case basis. FIDIC fails to define the term 'unforeseen'. This term evokes a kind of subjective negligence, omission and/or phenomenon that has already been encountered. This raises the question: where are the limits of what can be foreseen subject to the reasonable costs incurred and within the span of time for preparing the bid by an experienced contractor? Situations do of course appear that are absolutely

unforeseeable or that could have been foreseen by chance only, by an exceptional expert, and so on.

One of the key differences between the P&DB/1999 Yellow Book and the EPC/1999 Silver Book is in the risk allocation of unforeseeable physical conditions.

P&DB defines the term 'unforeseeable' in the same way as CONS. EPC does not define the term at all, assuming the definition to be redundant, as unforeseeable risks are commonly allocated to the contractor.

Given a particular situation, unforeseeability must be evaluated in respect of time for completion and the statistical frequency of event occurrences according to historical records. The following example is quoted in *The FIDIC Contracts Guide,* (2000) at Section 274. If the contract completion period is three years, then an experienced contractor should have foreseen an event that tends to appear once in six years, but an event appearing once every ten years is deemed unforeseeable. For details, see the charts in Appendix E.

15.6 Site data

Another vital aspect of the foreseeability issue is site data provided to the contractor as required by the Sub-Clause 4.10 of CONS and P&DB. Under this Sub-Clause, it applies that the employer shall, before the Base Date (28 days prior to the latest date for submission of the tender), provide the contractor with information and all relevant data available to them dealing with the sub-surface, on-site hydrological and geological conditions and environmental aspects. On this basis, the employer shall also make available to the contractor all such data that they acquire after the base date. Responsibility for interpretation of all this data rests with the contractor. To the extent practicable (taking into account cost and time), the contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Tender or Works. To the same extent, the contractor shall be deemed (prior to submitting the tender) to have inspected and examined the site, its surroundings, the above data, other available information and to have satisfied themselves with all relevant matters, including (without limitation):

- the form and nature of the site, including sub-surface conditions;
- the hydrological and climatic conditions;
- the extent and nature of the work and goods necessary for the execution and completion of the works and the remedying of any defects;
- the laws, procedures and labour practices of the country;
- the contractor's requirements for access, accommodation, facilities, personnel, power, transport, water and other services.

As can be seen, risk allocation is again shared. Risk is allocated to the contractor only to the extent that is reasonable and proportionate to the cost of the bid (e.g. site investigation, surveys) and time available for preparation of the bid.

Conversely, Sub-Clause 4.10 of EPC/1999 Silver Book transfers risk fully to the contractor. EPC stipulates that the employer must, before the base date, provide

the contractor with all information and significant data available to them (relating to on-site hydrological and geological conditions) and environmental aspects. Likewise, the employer shall also make available to the contractor all such data acquired after the base date. Responsibility for verification and interpretation of all data rests with the contractor. In other words, the wording in the Silver Book contains the contractor's obligation to verify the data. Furthermore, the employer bears no responsibility for the accuracy, adequacy or completeness of such data except for the data and information provided by the employer as per Sub-Clause 5.1 of the Silver Book:

- portions, data and information which are stated in the contract as being fixed or the responsibility of the employer;
- definitions of intended purposes of the Works or any parts thereof;
- criteria for the testing and performance of the completed Works; and
- portions, data and information which cannot be verified by the contractor, except as otherwise stated in the contract.

It is common practice for employers, for various reasons, to carry out site inspections and investigations (including geological surveys) at the tender stage. This is to accommodate for budget contingencies, to prepare the tender design, to assess the criteria for risk evaluation, and so on. There may also be a requirement upon the lender to conduct a respective risk analysis, feasibility study, and so on. At the tender stage, bidders need all such information gained by the employer to enable them to foresee (as much as possible) the work conditions and physical conditions that might affect implementation.

Site data are vital for the selection of technical solutions and methods of construction in case of the design-build (DB) projects. It may therefore be impractical for the employer to provide such particulars when they do not yet know the particular technical details. In Metcalf Construction Co. v. United States, (U.S Ct. of Appeals for the Federal Circuit, Case No. 2013-5041, Feb. 11, 2014) the U.S. Court of Appeals for the Federal Circuit dealt with the issue of the responsibility for errors in site data in a Design-Build contract and reversed a decision of the U.S. Court of Federal Claims.

The U.S. Court of Federal Claims said Metcalf was entitled to rely on the government soils report only "for bidding purposes," but not in performing the project. In rejecting the trial court reasoning, the Federal Circuit stated that the government cannot avoid contractor reliance on data and reports provided by the government merely by including broad disclaimers of liability for differing site conditions in the contract. That is not acceptable to the court. With regard to government's legal responsibility for pre-bid information, the court stated that "We do not think that the language can fairly be taken to shift that risk to Metcalf, especially when read together with the other government pronouncements, much less when read against the longstanding background presumption against finding broad disclaimers of liability for changed conditions in United Contractors v. United States, 368 F.2d, 585, 598 (Ct.Cl. 1966)." (For more information see http://www.constructionrisk.com).

Some DB projects have lower levels of risks associated with physical conditions and their impact on implementation conditions. Typically these are projects covering technology contracting with the use of EPC contracts where all bidders need very detailed site data. Obviously, the risk of the above physical conditions lies fully with the contractor who needs to know, for the assessment and selection of a technical

solution, how the above conditions will influence their design and what are the procedures and methods the contractor should select while realizing the project in the given conditions.

In the case of underground projects, it is in the interests of the employer to allocate these risks to themselves and to use, typically, P&DB/1999 Yellow Book rather than EPC/1999 Silver Book if the risks associated with the physical conditions and their influence on the implementation conditions are significant.

The employer should provide the bidders with as much site information about sub-surface and hydrological conditions as possible and it is in the best interests of both contracting parties (and to the construction project as a whole) to be familiar with all relevant, available data.

Such data, however, exclude any irrelevant data, incorrect data, expert opinions and interpretations and further information not related to sub-surface or hydrological conditions (Sub-surface conditions are the conditions underneath the ground surface, including those inside a water mass and those underneath riverbeds or sea beds; Hydrological conditions are water flows, including those in rivers and seas; Environmental aspects include, for example pollutants and contamination occurrences) (FIDIC, 2010).

The employer must, therefore, make the contractor familiar with the relevant data (above), both at the stage of tender preparation and during realization. Deliberately or negligently concealing such information may have responsibility-related consequences in tort or even criminal law, for example, breach of contract, damages and fraud.

The contractor must receive such relevant information in time to reflect its influence in the bid price and technical solution. The FIDIC forms, therefore, require the employer to provide this information no later than 28 days before the bid submission date.

It is very important to realize that the first FIDIC DB forms (i.e. P&DB), contain the same risk allocation of the unforeseeable physical conditions as CONS. CONS and P&DB require the contractor to interpret the information provided and to acquire all other necessary information as is reasonably possible. 'Reasonable possibility' will depend on timing, costs and other aspects such as the possibility of inspecting the site, access to site, and so on.

This requirement is tempered by the provision 'To the extent which was practicable (taking account of cost and time) … ' In other words, bearing in mind that only one tenderer will be awarded the contract and be in position to recover their tendering costs, it is not reasonable (either time-wise or cost-wise), to expect all tenderers to undertake major and expensive site and other investigations, even if such were physically possible (FIDIC, 2011a).

EPC/1999 Silver Book then requires of the contractor to further verify the site data provided by the employer.

Water-related construction projects by Robert Werth (Germany)

When it comes to standard forms of international infrastructure construction projects there is rarely an alternative other than to use the FIDIC model contract forms, especially when funding is required. And there are good reasons for it.

The FIDIC rainbow suite (Red/Yellow/Silver Books in 1999 First Edition) supplemented by the harmonized version of the Red Book (Pink Book) and the new Gold Book provide excellent tools for almost any kind of infrastructure projects. This is valid also for the broad range of water-related infrastructure construction projects.

The Red Book (or CONS as this form is officially called) is still the most popular standard form for measured construction contracts that fit water-related projects such as dams, harbours, dredging works, ports, and so on. The main reason is the unforeseeable nature of those projects mainly in respect to hydrological and geological ground conditions. It is typical of the Red Book (or re-measurement in general) that such risks are allocated to the employer and the actual necessity of the works is measured based on prices and rates proposed by the contractor.

But the use of the Red Book is not an absolute rule. More and more we can see that the Yellow Book (or P&DB as this form is officially called) is being used. One of the most interesting examples is the $5.25 billion Panama Canal Expansion, the 80-kilometer (49-mile) canal, which currently handles about 5% of world trade. The project involves the construction of a third set of locks and is intended to double the capacity of the canal by enabling larger vessels to use the waterway. The Panama Canal Authority has awarded a dry-excavation contract to the Group United for the Canal, a consortium led by Spanish contractor Sacyr under design-build delivery method using the (highly amended) Yellow Book. Three consortiums competed with their proposals and a stipend of $15 million was divided equally between the unsuccessful tenderers. Selection criteria were split between 55% technical and 45% price. The winning proposal had three water-saving basins per lock, while another proposal had double the amount of water-saving basins, which obviously increased the size and price of the work, so it was not possible to compete on the basis of lowest price.

At the beginning of 2014, a dispute arose about unexpected cost overruns estimated at US$1.6 billion. The contractor claimed that the employer provided poor geological surveys for the ground beneath the locks, leading to greater than anticipated cost.

The employer argued that the contractor has failed to support or validate the claims for cost overruns but that they were willing to consider the claims made by the contractor, provided that the contractor supported and presented these claims within the mechanisms established in the contract. The employer had already paid the contractor about $160 million in additional costs in areas that are subject to price escalations such as structural steel, rebar, diesel, cement and labour.

A classic dispute scenario was encountered where the contractor threatened to slow down and stop work on the canal expansion project if the employer continued to withhold payment and the employer threatened to issue a termination letter that would come into effect after 14 days and hire a construction manager that would finish the 28% of the unfinished works with the local subcontractors.

The Red Book is also frequently used for networks (either potable water or sewage systems). Technically any plant, such as water plants or wastewater-treatment plants, needs to be connected via networks with the households in the respective area. When it comes to contractual views the most regular scenario is to use the Red Book for the networks and the Yellow Book for the plant. Whether it will be via two different contracts or a division in sections within only one contract depends on the situation. Both cases are quite common.

On the other hand, water treatment; wastewater treatment plants or any plants related to the handling of waste will most probably work better with the Yellow Book.

The idea that the employer could make use of contractor's experience in the design stage is widely accepted and a rising number of Yellow Book contracts in such projects is good proof of market acceptance. There is a long list of Yellow Book projects available, such as the wastewater treatment plants for Vilnius in Lithuania, completed in 2010, at a cost of €45 million; Kotla Järve in Estonia, in 2009, at a cost of €26 million; Warsaw in Poland, in 2012, at a cost of €550 million; Nicosia in Cyprus, in 2012, at a cost of €25 million; Kielce in Poland, in 2012, at a cost of €58 million.

A good example of a plant typically executed under Yellow Book is the wastewater treatment plant. The experience of the contractor with design and/or construction under such specific circumstances may generate an advantage to the employer also for the whole operation phase. Employers do not want to refuse such an advantage by providing a detailed design with no contractor intervention. Another advantage for employers may be to include the operation period in the contract. That requires the contractor to train the employer's personnel and prove that it is possible to run the plant and secure all required performance parameters for a longer period (in contrast to only passing the test on completion under standard design-build delivery method). If the Employer prefers such an arrangement, the main contract is the Yellow Book in combination with another part of the contract for operation of the work (as a part of the original tender already). It is not recommended setting up the operation period for longer than two years and it is also recommended having a clear distinction between the Contractor's obligations under the design-build phase and the operation phase. Otherwise it may create a scenario in which the operation phase would be part of the time for completion and the defect notification period would only start after the operation phase.

If the contractor is to operate the plant for a longer period and if they also bring their own personnel for the operation, then the so-called Gold Book might be the best option. The Gold Book (or DBO as this form is officially called) was invented for the design and build of a plant with minimum of ten years of operations under the responsibility of the Contractor.

The Silver Book (or EPC as this form is officially called) is not widely used in water-related projects as under the EPC arrangement, the employers complain about the lack of control over technical solutions once the contract is signed and the contractors most likely do not want to accept the broad risk allocation on their side. However, there are some particular cases where the Silver Book perfectly suits, even in water-related projects.

This is the case in the construction of seawater desalination plants, where the Silver Book suits perfectly. The site is usually small so the ground conditions risk is reduced and easier to control and evaluate. There are no heavy loads to be considered, the foundations are simpler and the total risk remains small. The performance requirements for effluent are easily defined, there are clear measurements available and there is always a separate neutral authority supervising the results. On the other hand, there are no enormous amounts of by-products, which may have a significant impact on the price of the product in future (like sludge or other residues which originate within the sludge treatment in wastewater treatments plants, for example).

The site can be handed over to the contractor and when production starts, of course with all the relevant tests certified, the repayment can be agreed as a lump sum or by measurement of the water produced within a certain period.

For both Silver and Gold Book forms, the financing provided by contractor can be added for the whole or a defined part of the project. The repayment may be done within the monthly fee for operation cost. FIDIC does not provide a standard form for a DBFO delivery method,

i.e. where the contractor provides financing. However, financing may be included in the DBO contract within the particular conditions. Securities to be provided by the contractors are then as important as with any other loan agreement and they have to be tailored to the specific circumstances.

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15.7 Sufficiency of the accepted contract amount

In Sub-Clause 4.11, CONS/1999 Red Book and P&DB/1999 Yellow Book stipulate that the contractor shall be deemed to have satisfied themselves as to the correctness and sufficiency of the accepted contract amount, and have based the accepted contract amount on the data, interpretations, necessary information, inspections, examinations and satisfaction as to all relevant matters referred to in Sub-Clause 4.10 (and any further data) relevant to the contractor's design. Unless otherwise stated in the contract, the accepted contract amount covers all the contractor's obligations under the contract and all things necessary for the proper design, execution and completion of the works and the remedying of any defects. EPC/1999 Silver Book allocates the risk of the unforeseeable physical conditions to the contractor and does not assume any significant modifications in price for the work that might result in connection with unforeseeable physical conditions.

15.8 Unforeseeable physical conditions

CONS/1999 Red Book and P&DB/1999 Yellow Book define (in Sub-Clause 4.12) 'physical conditions' to mean 'natural physical conditions and manmade and other physical obstructions and pollutants, which the contractor encounters on the site when executing works, including sub-surface and hydrological conditions'. Climatic conditions are excluded.

These conditions are encountered on any construction site, i.e. where the project is realized (permanent works) and where the technologies and materials are to be supplied, as well as any other places that might be specified in the contract as parts of the site. Adverse impacts of climatic conditions on sites are not, therefore, regulated by this Sub-Clause. Hydrological conditions also include water flows caused by off-site climatic phenomena. On-site physical conditions exclude on-site climatic conditions, and, therefore, the hydrological consequences of these on-site climatic conditions (FIDIC, 2000).

Adverse climatic conditions are covered separately as a shared risk pursuant to Sub-Clause 8.4 where the contractor may only claim extensions of time for completion but not additional payment. Occurrences of extremely adverse natural

forces and their impacts are then covered as an employer risk and *force majeure*, see Section 15.10.

If the contractor encounters adverse physical conditions which they consider unforeseeable, they must notify them to the engineer as soon as practicable. This notice shall describe the physical conditions so they can be inspected by the engineer. The notice shall set out the reasons why the contractor considers them to be unforeseeable. The contractor shall continue executing the works, using such proper and reasonable measures as are appropriate for the physical conditions and shall comply with any instructions which the engineer may give. Where an instruction implies a variation, further work shall follow the variation procedures outlined in the contract, i.e. mainly the price increase in connection with the variation shall be paid to the contractor.

Should the encountered physical conditions not be deemed a *force majeure*, the contractor must continue to realize the project without waiting for the engineer's instructions.

It is further stipulated by Sub-Clause 4.12 that:

> If and to the extent that the contractor encounters physical conditions which are unforeseeable, gives such a notice, suffers delay and/or incurs cost due to these conditions, the contractor shall be entitled to an extension of time for any such delay, if completion is or will be delayed and payment of any such cost shall be included in the contract price.

In other words, the contractor cannot add their profit mark-up to the additional costs due to these unforeseeable physical conditions. Here, it is again a shared risk whereas the costs pursuant to the FIDIC forms mean all expenditure reasonably incurred (or to be incurred) by the contractor, whether on or off the site, including overhead and similar charges, but not profit.

Having received notice of the physical conditions and their inspection, the engineer shall decide if, and to what extent, these conditions are unforeseeable and decide on the contractor's claims. The engineer may reduce the claim for additional payment if, during the implementation of similar works, more favourable conditions appear than those that could have been reasonably foreseen when the contractor submitted their bid. The total sum, however, may not result in a reduced price for the work. The engineer must not delay payment of a contractor's claim beyond the point in time when they verify the 'favourability' of the conditions during implementation of similar works.

Concerning risk allocation, a substantial shift is encountered in Sub-Clause 4.12 of the FIDIC EPC/1999 Silver Book which has an updated title '*Unforeseeable Difficulties*'. Sub-Clause 4.12 stipulates that: 'except as otherwise stated in the Contract, the Contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Works'. It is further stipulated that the contractor – by signing the contract – accepts total responsibility for having foreseen all difficulties and costs of successfully completing the works and the contract price shall not be adjusted to take account of any unforeseen difficulties or costs.

This provision clearly stipulates that risk is allocated to the contractor except in situations defined by the contract (such as *force majeure*). *Force majeure* and its relationship with foreseeability are discussed below.

It is highly probable that this Sub-Clause and some of the other Sub-Clauses of the EPC/1999 Silver Book might be – depending on the circumstances – considered void by courts in some jurisdictions (see the Section 13.10).

15.9 Unforeseeable operation of the forces of nature

The FIDIC CONS/1999 Red Book and P&DB/1999 Yellow Book define as employer's risk: 'all operation of the forces of nature which are unforeseeable or against which an experienced contractor could not reasonably have been expected to have taken adequate preventative precautions' (as per Sub-Clause 17.3 h). EPC/1999 Silver Book allocates this risk to the contractor – with exception of the situation when the consequences of such unforeseeable natural forces would be so adverse that they would acquire the nature of *force majeure* (Clause 19 of the FIDIC forms).

If, and to what extent, natural, unforeseeable processes lead to losses or damaged construction work, the contractor must promptly give notice to the engineer and shall rectify this loss or damage to the extent required by the engineer.

Should the contractor suffer a delay or costs due to remedying this loss or damage, the contractor shall submit to the engineer an additional notice and will have the right to claim an extension of time due to such delay. If the completion is (or will be) delayed, a claim for payment and any associated costs will be included in the contract price.

Thus, the contractor can claim compensation for losses, damage, expenses for remedy and the costs caused by extensions of time for completion due to a loss, damage or remedy, or even expenditures due to late instructions of the engineer during the remedying of losses and damages.

Under the FIDIC forms, insurance for works and contractor's equipment under Sub-Clause 18.2 shall also cover loss or damage to a part of the works which is attributable to the use or occupation by the employer of another part of the works, and loss or damage from the risks listed in sub-paragraphs (c), (g) and (h) of Sub-Clause 17.3, excluding (in each case) risks which are not insurable on commercially reasonable terms. This means that unforeseeable events caused by the forces of nature must be insured by the contractor.

Clairvoyance: A contractor's duty? by Gustavo Paredes and Katherine Waidhofer (Peru)

If clairvoyance were an exact science, then the wizard Merlin, Nostradamus, St. Malachy and others would be contractors. However, that extrasensory perception without the help of technical means goes beyond earthly contractual agreements. But while this may seem to be clear, it is not so clear in the field of construction claims and disputes, because sometimes the contractor must assume obligations that go beyond their extrasensory perceptions.

One of the most frequent complaints by contractors at the worksite concerns unexpected soil conditions. It often happens that during the execution of the work, the contractor finds that the characteristics of the soil or subsoil on which he has to build differ from those physical or mechanical characteristics referred to in soil and/or subsoil studies carried out as part of the tender design.

This situation (unforeseen soil conditions) is known as the 'great risk' in the construction industry. This was the term used by the Supreme Court of New Jersey in the case *PT & L Construction Co. Inc. vs the State of New Jersey* (1987). But this great risk had been recognized even earlier in *Foster Construction v The United States* (1970).

Certainly, to complete the construction work, which is the purpose of the work contract, higher costs will be incurred to overcome unforeseen soil condition issues and complete the construction work. So, the question the psychic asks herself is: who should bear the higher costs for the execution of the work in unforeseen circumstances, the owner or the contractor?

Also, dealing with unforeseen soil conditions to bring them closer to the conditions detailed in the project information may also affect the critical path and require additional time. Then another question arises: is the contractor entitled to an extension of the contract term to cover the extra overheads, or does the employer have the right to impose penalties for the work delay?

Now, to predict the future it is essential to know who assumed the risk for the unforeseen soil and/or subsoil conditions: the employer or the contractor?

Like almost all answers in matters of law, 'It depends.' Determining which party in a construction contract has assumed the 'great risk' basically depends on the type of construction contract being executed and the obligations assumed by the parties. Then we can foresee how the great risk is assumed in two of the most commonly used forms of work contract: a construction contract designed by the employer and a turnkey contract.

In a construction contract designed by the employer, the main obligation of the contractor consists of the construction of the work, according to the requirements and engineering provided by the employer. In this type of contract, the contractor receives the design and carries out the construction process with the obligation to deliver the completed works in full accordance with the terms and instructions received from the employer.

In this case, the preparation of the exploration and soil mechanics study is not one of the contractor's obligations; neither is the contractor responsible for developing the design or its technical suitability. Therefore, under this type of contract, the contractor does not assume the risk for unforeseen soil conditions.

This is accepted practice in the construction industry. For example, Sub-Clause 4.12 of the Conditions of Contract for Construction for Building and Engineering Works designed by the Employer (the Red Book) of the International Federation of Consulting Engineers (FIDIC), states that if the contractor encounters adverse physical conditions considered unforeseeable, he should notify the Engineer as soon as possible.

In this case, it is understood that the Contractor has the right to an extension of time or payment of additional costs, provided that it has been ascertained that the conditions were unforeseeable, that the contractor had duly notified the situation and had suffered some delay or incurred additional costs resulting from these conditions.

However, in this type of contract there is often a clause (drafted by the employer, not covered by the FIDIC Red Book), usually in a section called 'contractor's statements', to which not much attention is usually paid. However, during the claim stage or in an arbitration itself, this clause can become one of the main defence weapons available to the employer when facing claims from the contractor.

We refer to that clause in which the contractor declares his awareness, for the purposes of executing the works, of the physical and mechanical soil and subsoil conditions of the area where

the work is to be executed, and is satisfied with them. It is even customary for the contactor to visit and inspect the area, and this action is also included in his declaration.

With this clause has the cautious – or astute – employer transferred the 'great risk' of unforeseen soil conditions to the contractor? Usually, under this type of contract it is the responsibility of the employer. In other words, is it the contractor's duty to be clairvoyant as well? The answer is no.

This declaration of awareness does not in itself transfer the 'great risk' from the principal or owner to the contractor. This declaration must be understood as having limits of responsibility based on information received from the employer; or based on any information regarding the soil characteristics and properties that can be obtained by the contractor from an inspection of the area prior to construction, but does not make the contractor responsible for those unforeseen conditions.

For example, in *Spearin vs the United States* (1918), which is considered a leading case in construction law, the US Supreme Court determined that if the contractor is obliged to build according to the plans and specifications prepared by the employer, the contractor will not be liable for the consequences of the defects in the plans and specifications. The court said that the owner's liability for the specifications is not affected by the usual clauses requiring contractors to visit the site, review plans, and to inform themselves of the requirements of the work. Therefore, for the 'great risk' to be transferred to the contractor, there must be a clear and express agreement that leaves no doubt regarding the assumption of this risk by the contractor. This, in itself, further includes the contractor's right to factor this risk into his price.

A diligent contractor, when accepting this risk, will perform a 'validation' of that information provided by the employer, and will even carry out further studies himself. Consequently, this risk will be reflected in the contract price.

Notwithstanding this, in most Latin American civil codes, the contractor's obligation is to immediately report to the principal any soil defects or the poor quality of any materials supplied by the employer, if discovered prior to or during the execution of the works and that may compromise their normal execution. In Peru, both the Civil Code and the Public Procurement law clearly make the contractor responsible for the immediate reporting of soil defects once identified. Many arbitral awards have been made on the application of this aspect of the law.

Interpretation of this obligation must depend on a consideration of the particular contractor concerned. If the contractor is experienced, he would be expected to give warning of the poor quality of the soil or unforeseen conditions as soon as possible, and not when the works are at an advanced stage.

The prompt reporting of such problems by the contractor could mean the difference between his receiving the full amount of the costs incurred to overcome these issues or only receiving partial payment if failing to act in accordance with the standards expected of an experienced contractor by allowing the works to advance (despite being aware or when he should have been aware), of the soil conditions.

However, the situation regarding 'turnkey' contracts is different. There is no specific definition of this kind of contract in the Peruvian legislation; nevertheless, both nationally and internationally, it is understood and accepted as one in which the contractor is responsible for the design, procurement, construction and operation of the works.

In this type of contract, the contractor assumes responsibility for unforeseen soil conditions. For example, Sub-Clause 4.12 of the General Conditions of Contract for EPC/Turnkey projects of the FIDIC Silver Book provides, in general terms, that unless otherwise stated in the contract,

it will be assumed that the contractor has obtained all necessary information about the risks that may influence or affect the works; accepts full responsibility for foreseeing any difficulty and cost in the proper completion of the works, and that the contract price will not be adjusted due to unforeseen difficulties or costs. This is reasonable, given that the contractor, operating as a specialist and expert, should have made adequate provision for the reasonable scope of such risk in the price offered and contracted. Under Peruvian Public Procurement law, a similar design of contract is used, known in Spanish as '*concurso oferta*', which follows the same rationale in economic terms and scope of liability.

However, it is important to point out that in certain cases such as where the project mainly involves underground works and tunnels and where subsoil conditions make it extremely difficult for the contractor to carry out inspections at the bidding stage, FIDIC does not recommend the use of the Silver Book. In these circumstances, the transfer of the risk to the contractor would disproportionately affect the contractual balance between the parties.

In conclusion, the answers to the questions posed at the beginning of this case study should be found in the specific obligations assumed by the parties in the work contract. However, in the absence of any express agreement in the contract, we can identify the type of contract being executed and use that as the starting point to determine who has taken the 'great risk', and from there, determine the rights of the parties to guide efficient claims handling on site.

As can be seen, then, it is not necessary to resort to occult sciences or withdraw from reality to predict what will happen to a claim and/or charging of the duty of clairvoyance. The magic formula is knowing your customer's business.

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15.10 *Force majeure*

An unforeseeable physical phenomenon can become a *force majeure* event. FIDIC defines *force majeure* in Sub-Clause 19.1 as:

> an exceptional event or circumstance which is beyond a party's control, which such party could not reasonably have provided against before entering into the contract, which, having arisen, such party could not reasonably

> have avoided or overcome and which is not substantially attributable to the other party.

Force majeure must, therefore, be an exceptional event whether foreseeable or not. Under *force majeure* the contractor can claim an extension of the time for completion as well as additional payment. In Sub-Clause 19.1 (v) of EPC, a demonstrative enumeration of natural catastrophes such as earthquakes, hurricanes, typhoons or volcanic activity is specified as being subject to a contactor's claims for an extension of time for completion only. Exclusively man-made *force majeure* events are subject to contractor's claims for additional payment. If a *force majeure* impedes execution of the unfinished construction work as a whole, for (1) a continuous period of 84 days, or (2) repeating spans of time adding up to more than 140 days altogether (for the same reason of the reported *force majeure*), then one of the contracting parties can give notice to the other of its termination of the contract.

It is interesting to note that FIDIC has moved away from using the term *force majeure* because of its unclear nature, diversity and definition in individual jurisdictions. FIDIC now refers to the respective issues as 'Exceptional Risks'.

15.11 Release from performance under law

In its extreme form, an unforeseeable physical phenomenon may lead to release from performance according to the governing law of contract. Under the FIDIC forms (Sub-Clause 19.6), it is stipulated that:

> If any event or circumstance outside the control of the Parties (including, but not limited to, Force Majeure) arises which makes it impossible or unlawful for either or both Parties to fulfil its or their contractual obligations or which, under the law governing the contract, entitles the parties to be released from further performance of the contract, then upon notice by either party to the other party of such event or circumstance the parties shall be discharged from further performance, without prejudice to the rights of either party in respect of any previous breach of the contract.

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16 Securities

16.1 Securities in construction

Numerous risks burden construction projects. These risks should ideally be allocated to the project participants (mainly to the contractor and the employer) based on their respective abilities to control them. The parties should insure themselves against individual risks but this is not always possible because some risks are non-insurable. In general, non-insurable risks include the risk that the contractor will fail to perform in accordance with the contract (executing the works and remedying the defects within the defects notification period) and the risk that the employer will fail to pay. An exception to the former is the so-called *Subcontractor Default Insurance* used in the US. If participants cannot insure risks by way of an insurance policy, they may secure them by contractual means or further specific instruments. Examples of the former include contractual penalties and retention money. Examples of the latter include bank documents such as letters of credit, stand-by letters of credit and bank guarantees.

The bank guarantee has become so popular during recent decades that it now appears in most standard forms of contracts in large construction projects. The principle of bank guarantees is that the bank will pay to the contractor or employer (at their request) a pre-agreed sum that will compensate adverse implications of the failure to act or of defective performance by either of the parties should the contractor or the employer fail to meet their obligations.

The requirement to issue such guarantees may sometimes come not only from the contract itself but directly by law. This is the case in the event of a guarantee for payment for the works in accordance with *Umowy o roboty budowlane* (Contract for Works) in Poland or where the public contracts are to be secured; for example, in Germany or the US.

International Construction Contract Law, First Edition. Lukas Klee.
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16.2 Bank guarantees

A bank guarantee is a versatile financial instrument which allows both financial and the non-financial obligations to be secured in national and international contracts entered into by legal (corporate) persons or natural persons as contractors or employers.

The most frequent types of guarantees in practice secure the duty to sign the contract by the contractor, contractor performance, employer advance payment, contractor duty to repair defects in the defects notification period and the guarantee that is used in place of retention money. Contractor guarantees are mainly for non-payment obligations to secure their performance. On the employer's side, there are payment guarantees securing the employer's duty to pay for the works, goods or services received. Note: the above guarantees may be known by other names, depending on the jurisdiction.

The building construction and civil engineering industry rank themselves among the largest 'users' of bank guarantees in terms of their amounts and frequency of use. The most common types of guarantees used in construction are tender guarantees (bid bonds), i.e. security of the contractor's duty to sign the contract.

Regarding bank guarantees, a new party (the guarantor) with well-controlled and declared credit stands between the contractor and the employer. The guarantor secures the contractual duties of the parties in case of breach of contract. Should one of the parties fail to perform, the guarantor shall pay an agreed amount to the other party. The force of security is further enhanced by the abstract nature of such a bank guarantee and by the bank's duty to perform on the first demand without any objections. It implies, in practice, that the bank does not inquire into whether or not the breach of the contract really occurred and, further, is not even entitled to raise objections which the parties might otherwise raise between themselves.

16.3 Functions and parameters of bank guarantees

16.3.1 Vadium/Tender Guarantee/Bid Bond

- Beneficiary: The employer
- Ordering party: The contractor
- Amount: 1 – 5% of the future contract price
- Purpose: To secure the contractor's duty to sign the contract
- Substantial validity: Expiry of tendering period/validity of tender.

A tender guarantee will protect the employer against the risk that a contractor (the participant of the tender) becomes disinterested for any reason whatsoever, withdraws their bid prematurely, fails to sign the contract or to observe the parameters of their bid. The employer is thus compensated for the cost arising from the postponement of execution of the works, re-tendering, and so on. Submission of such a guarantee is often a precondition for admission to a particular public procurement.

16.3.2 Advance Payment Guarantee/Down Payment Guarantee/Advance Payment Bond

- Beneficiary: The employer
- Ordering party: The contractor
- Amount: 5 – 30% of contract price
- Purpose: To secure return of the advance payment should the contractor fail to perform
- Effectiveness clause: Effectiveness of guarantee is usually subject to payment of an advance payment to the contractor's particular account kept by an issuing bank
- Substantial validity: Foreseeable time for completion of delivery (+30 days).

This guarantee will find its application in construction projects with the contractor being funded by means of advance payments. The guarantee will secure to the employer return of the advance payment for the unaccomplished part of the obligation for which the advance payment had been given.

16.3.3 Performance Guarantee/Final Guarantee/Performance Bond

- Beneficiary: The employer
- Ordering party: The contractor
- Amount: 5 – 10% of the contract price
- Purpose: To secure fulfilment of the contractor's contractual obligations
- Substantial validity: Until completion of the contract works (signing of the Taking-Over Certificate +30 days).

This guarantee secures the risk that the contractor may, for any reason whatsoever, breach their duty to complete the works. The guarantee is to cover, for example, the cost incurred in connection with such non-completion. The employer will usually require the security once the contract is signed or shortly after.

16.3.4 Warranty Guarantee/Maintenance Guarantee/ Maintenance Bond

- Beneficiary: The employer
- Ordering party: The contractor
- Amount: 5 – 10% of the contract price
- Purpose: To secure the contractor's contractual duty to repair all defects within the defects notification period and protect the employer against the contractor's unwillingness or inability to remedy the defects
- Substantial validity: Duration of the defects notification period.

This type of guarantee is required by the employer for works, plant, and so on for which a defects notification period has been agreed. If the contractor fails to remedy

the defects within this period, the employer will use the guarantee to acquire funds to remedy the defects using the services of another contractor, if any.

16.3.5 Retention Guarantee/Retention Bond

- Beneficiary: The employer
- Ordering party: The contractor
- Amount: 5 – 10% of the contract price
- Purpose: To secure the contractor's contractual duty to repair all defects within the defects notification period
- Effectiveness clause: Effectiveness of the guarantee is usually subject to payment of retention money to a particular account (usually at the issuing bank)
- Substantial validity: Completion of a certain stage of the project, expiry of defects notification period.

This guarantee is applied where the employer withholds, during the course of a construction project, a certain amount (retention) from payments to the contractor. If, however, the contractor wants to get the retention earlier, they may submit the bank guarantee at the level of the pre-agreed retention with the employer's consent.

16.3.6 Payment Guarantee/Payment Bond

- Beneficiary: The contractor
- Ordering party: The employer
- Amount: As per contract (e.g. the full contract price, its portion, and so on)
- Purpose: To secure the employer's duty to pay
- Reduction clause: Each time after a partial payment is effected
- Substantial validity: 30 days after maturity of the final payment obligation.

This guarantee will secure the contractor against the employer's insolvency. The validity of such a guarantee is always limited by a fixed date. The term of validity expresses exactly when the rights of the guarantee beneficiary will expire and the timeframe for which the bank remains obliged to this beneficiary.

16.4 Specifics of Retention Guarantee

Retention guarantees are commonly used in construction projects. Retention, or the money withheld, is perceived as a portion of the contract price the employer will 'retain' and pay to the contractor once the works/goods/services are taken over or in response to an interim invoice. This will be at some later date set out in the contract (such as after completion of a certain stage of the project, once a milestone is fulfilled or defect notification period expires). The retention is usually determined as a percentage and forms part of the agreed payment conditions.

The reason behind 'withholding' a portion of the contract sum (usually at the level of 5 – 10%) is the employer's endeavour to secure fulfilment of the conditions of contract on the side of the contractor and to protect themselves against the

contractor's unwillingness, lack of will, or impossibility of remedying the defects within the defects notification period.

The parties can agree on earlier payment of this retention – usually upon taking over of the works or once a certain milestone is achieved but provided that the contractor submits to the employer a bank guarantee in place of retention at the level agreed in the contract. This will favour the contractor; allowing them to improve their cash-flow because they will receive the retention earlier than they would be entitled to in accordance with the contract. This helps to protect the contractor against the employer's lack of will or impossibility of paying that could emerge after the defects notification period expires. Because of the significant length of the defects notification periods used in construction projects, the contractor is partly protected against inflationary impacts as well. The advantage for the employer is that they have the option to request payment should the contractor fail to meet their obligations because of bankruptcy.

In respect of the fact that the beneficiary can use the guarantee in the event of lacking, improper or untimely performance of the contractor's obligations under the contract, the retention guarantee serves, therefore, a similar purpose as the performance guarantee or the maintenance guarantee.

The retention guarantee is usually required when the taking-over certificate is signed, unlike the performance guarantee which is usually required by the employer shortly before the contract is signed and which generally secures performance in accordance with the conditions of contract, i.e. to deliver on time and at the required quality.

The different nature of the retention guarantee versus the maintenance guarantee can be seen by the absence of any cash flow between the contracting parties through the maintenance guarantee. Substantially, both guarantees secure identical obligations, i.e. fulfilment of the contractor's duties as they arise from the agreed defects notification period.

As a rule, retention and advance payment guarantees include a clause on their postponed effect from the moment when the retention is actually credited to the contractor's bank account. For example:

> Claims from this bank guarantee issued under reference of …… can be raised only provided that the retention at the level of …… will be credited in full to our client's account no. …… kept by our bank ……. .

A less frequently used (and more problematic) alternative may be crediting the retention to an account kept by a bank other than the bank providing the guarantee. A problem will arise if an amount other than the one determined by the guarantee is credited, even though the difference may only be marginal. The circumstances under which the 'other' amount (which is not expected by the parties) can be credited may relate to, for example, subtraction of the bank fees, rounding errors, inclusion of mutual debts and liabilities, and so on. Whenever the conditions upon which a bank guarantee is to be effective are agreed upon, it is usually in the best interests of the beneficiary that the issue is taken into account so they can be sure about the effectiveness of the bank guarantee.

Performance security and termination payment security in hydroenergy projects by Alex Blomfield (UK)

Given the complexity of hydropower project execution and weak balance sheets of some contractors and consultants, international hydropower construction contracts usually contain a wide range of performance security and payment structure mechanisms to protect the interests of the parties. Employers and project finance lenders tend to place great store in having on-demand bank guarantees backing performance (with a step-down in value following taking-over) and any advance payments. Contractors often try to avoid providing on-demand bank guarantees and almost always try to limit their size, not least due to difficulty of finding willing issuing banks that meet minimum rating requirements throughout the life of the contract in the current uncertain international banking environment.

Retention offers an alternative mechanism for performance security, according to which the Employer deducts or retains an agreed percentage of the amount of each payment certificate (usually 5 – 10%) instead of paying each payment certificate in full. According to FIDIC, the employer pays the first half of the retention money to the contractor after the issuance of the taking-over certificate for the works, and the outstanding balance of the retention money promptly after the latest of the expiry dates of the defects notification periods. However, if any work remains to be executed pursuant to provisions on defects liability and tests on completion, the engineer shall have the right to withhold certification of the estimated cost of this work until the contractor has executed the relevant work (in the case of the 1999 FIDIC Red Book or the FIDIC Yellow Book contracts or other contracts requiring engineer certification), or the employer shall have the right to withhold payment of the retention money until the contractor has executed such work. Of course, parties to international hydropower construction projects often choose to modify these standard FIDIC provisions on retention and often even delete the retention provisions altogether. In this way the parties avoid the adverse effects of retention on the liquidity of the contractor and the incentive for the contractor to front load its payment schedule. Instead, the parties often seek to negotiate a payment schedule with a neutral cash-flow and performance securities with larger face value.

Employers seeking the most robust security of performance and payment insist upon parent company guarantees, collateral warranty agreements with major subcontractors and lien releases on taking-over from all contractors and subcontractors. A parent company guarantee enables an employer to demand that a parent company remedy the breach of a contractor. It is particularly useful in giving an employer recourse against a strong balance sheet in the event of it needing to claim the maximum termination payments due under the main contract.

Collateral warranty agreements work as follows: Major subcontractors make warranties in relation to their works directly to the employer. The employer then has direct recourse against major subcontractors. A collateral warranty agreement therefore protects the employer in situations where the contractor becomes insolvent. Contractors tend to resist asking their subcontractors to sign such agreements.

In some jurisdictions, contractors and subcontractors have the right to claim a lien in the works if they have not been paid. Such liens can prevent taking over by the employer with clear title to the generation facility meaning that the employer could have difficulty operating the plant and earning revenue. In this way a contractor's non-payment of its subcontractors becomes an issue for the employer and its lenders. Requiring each contractor and major subcontractor to execute and deliver waiver and release of liens as a condition to taking-over is a

way of mitigating this risk by employers. This forces each contractor to pay its major subcontractors in full and protects the employer against third party claims related to the works.

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16.5 Governing law

By agreement of the parties, bank guarantees can be made subject to any governing law. Selection of law must always be considered carefully, as not all legal systems define the guarantee in such an abstract form and only know the concept of suretyship. Therefore, major misunderstandings and disputes may arise in preparing the draft wordings if the works are executed abroad. Of course, it is then necessary to also take into account the legal expenses that might, where a dispute breaks out, influence the cost and the problems that the confusion between the guarantee and the suretyship may bring about in relation to the validity of the financial obligation and its level. As a unilateral act, the bank guarantee is usually subject to the law of the country of the issuing bank unless otherwise determined in the securing document.

If a bank guarantee is to be governed by a foreign law not usually used by the issuing bank, then such a bank will require of the ordering party an indemnification statement applicable to any damages caused to the bank by applying such a law. The bank will also require such indemnity in the event of high risk beneficiaries who have a history of non-standard conduct in their transactions in the past. A situation may appear in practice where the construction project participants (mostly employers) will ask for payment from the bank without due reason, giving rise to complicated litigation and injunction tactics. For the above reasons, insurance companies also provide policy cover against withdrawals from bank guarantees.

So-called 'counter-guarantees' are also widely used in international transactions. In this case, the employer will usually appoint (mostly in public tendering) a bank which will issue the bank guarantee to secure the contractor. It is almost without exception a local bank with which the contractor obviously has no open credit link for the bank products to be provided.

The contractor's bank will then issue a 'counter-guarantee' in favour of the above local bank at the employer's location. With this counter-guarantee in hand, the local bank will then issue the final guarantee where the beneficiary is already stated as the employer.

Different forms of securities may also be required or enabled by governing law. Take, for example, the provisions that regulate guarantees for payment of the contract price in Poland. These provisions have been in effect since amendments were made to the *Polish Civil Code* in 2010. These new provisions set out the

contractor's right to require the issue of a security for the payment of the contract price on the basis of *Umowy o roboty budowlane* (Contract for works). They are strict mandatory provisions and contractual deviations from them are ineffective. The provisions prescribe exhaustive enumeration of potential forms of guarantees. The contractor may require the guarantee to be issued at any time while the works under contract are executed. If the contractor does not receive any required security within a certain period of time (not less than 45 days), then the contractor will have the right to terminate the contract.

The differences between the Anglo-American and European jurisdictions must also be borne in mind whenever contracts for securing large construction projects are entered into. For example, specific formal demands are imposed on securities where English law is practised. Special forms of 'deeds' play a role in the event of a performance guarantee to be paid out on the first request. Such a guarantee is usually issued unilaterally by a bank or a financial institution in favour of the parties with which the bank shall not have any direct contractual relationship and receive nothing from them in return. 'Consideration' (necessary for establishing a binding contract under common law) will usually be missing here. Given such circumstances, the security will have to be made in the form of a deed for it to be enforceable. On-demand performance security under English law was considered recently in Doosan Babcock Ltd v Comercializadora De Equipos Y Materiales Mabe Limitada [2013] EWHC 3010 (TCC).

There is another typical form of security available in some jurisdictions protecting smaller contractors and subcontractors without any direct contractual relationships with the employer. In the US, there are 'mechanics liens' which actually create a right of lien, e.g. to a fleet of machines or to work being constructed. Its variant rests with 'direct payments' to subcontractors, guaranteed in certain, predefined situations – usually when the contractor fails to pay to a subcontractor as required by law, as is the case in Poland, for example.

Common law specifics related to securities by Rupert Choat and Aidan Steensma (UK)

Deeds play a central role in construction and engineering projects. Many construction and engineering contracts, and similar contracts such as collateral warranties, are entered into as deeds. The primary advantage of doing so is to secure the benefit of a longer limitation period (sometimes referred to as 'prescription' in other jurisdictions) than if the contract were not a deed (12 years instead of 6). Rights under deeds therefore last longer.

Deeds also perform a special role when it comes to on-demand performance bonds. Such bonds are usually issued unilaterally by a bank or financial institution in favour of parties with whom it will have no direct commercial relationship and from whom it will receive nothing in return. There will therefore usually be insufficient 'consideration' to form a binding contract at common law. In such circumstances, the bond will need to be executed as a deed if it is to be enforceable by the beneficiary. If, however, there is an irregularity concerning the bond so that it does not constitute a deed, the bond will not be enforceable.

It is surprising in this context that one often finds performance bonds which are expressed to be subject to English law and yet are not properly executed as a deed. The requirements

for execution under English law are not particularly complex and all that is usually needed is for the document to state that it is 'executed as a deed' and to be signed and/or witnessed by the appropriate persons depending on the nature of the company executing the deed. Non-compliance with such formalities can, however, have far-reaching implications.

It is sometimes said that the formalities of execution are less important when dealing with large, well-known financial institutions, as they are less likely to rely on legal technicalities to avoid their obligations. Such comments overlook the fact that an institution's willingness to pay out on a bond is usually tied to the confidence it has in being able to recover the sums paid from its client and/or under the applicable cross-indemnities. No bank will willingly pay out on a performance bond if it will be left out of pocket.

In such circumstances, any defect in the formalities of execution may enable the procuring party (i.e. the bank's client and usually, but not always, the provider of the counter-indemnities) to place pressure on the bank to refuse payment of the bond. The procuring party may, for example, threaten to rely upon the invalidity of the bond as precluding any recovery under its cross-indemnity to the bank. If the bond is invalid, then payment could potentially be viewed as voluntary and outside the scope of the cross-indemnity.

An example last year from Australia illustrates this risk well (which applies where English law governs the relevant bond). In *Segboer v AJ Richardson Properties* a contractor arranged for a bank to issue an on-demand performance bond in favour of a developer as security for the contractor's obligations under its building contract with the developer. The performance bond was issued by the bank as a deed, however, following a call on the bond by the developer, the contractor contended that the bond had not been properly 'delivered' as a deed and was therefore invalid. The 'delivery' of a deed is a formal requirement of English law and will ordinarily take place upon execution unless circumstances suggest that some later time for delivery was intended (which was the argument made by the contractor in *Segboer*).

The contractor's argument did not succeed and the performance bond was ultimately held to be enforceable. It is notable, however, that once the contractor had made its objection, the bank refused to pay under the bond. This necessitated court proceedings by the developer, in which the bank claimed against the contractor under its cross-indemnity (that being the only route by which the bank could be assured of recovering against the contractor if it paid out under the bond). Accordingly, even though the contractor's argument was unsuccessful, it still resulted in considerable delay and expense in enforcing what was intended to be a cash-equivalent security.

The proceedings in *Segboer* provide a helpful warning for employers and owners to scrutinise the execution formalities of English law performance bonds delivered by contractors. If the formal requirements for the execution of deeds have not been met, the contractor may be able to successfully challenge payment by the bank.

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16.6 ICC rules related to securities

To overcome differences in interpretation, unify practices and exclude costly negotiations, the International Chamber of Commerce in Paris has prepared rules for various fields of business, transport, insurance, arbitration, banking and so on. Guarantees are governed by the Uniform Rules for Demand Guarantees (URDG 758).

The URDG 758 consists of a set of contractual rules designed to regulate demand guarantees and counter-guarantees. The rules apply where they have been expressly incorporated by reference in a guarantee or counter-guarantee. Where this is the case, URDG 758 applies entirely unless specific articles are explicitly ruled out or amended. The URDG 758 may also apply even if not expressly incorporated by reference to the text of a guarantee or counter-guarantee in the event of (1) indirect, asymmetrical guarantees; and (2) as a result of trade usage or a consistent course of dealing.

URDG 758 aims to ensure fair practice and clear guarantees and counter-guarantees that should result in a shorter negotiating process while allowing the applicant greater opportunity to secure the beneficiary's acceptance.

16.7 Suretyship

Besides bank guarantees, contractual duties may be secured by suretyship. The main difference between these forms of security relates to the respective contract (for works between the employer and the contractor for example). While a bank guarantee is an abstract instrument independent of this relationship, suretyship is the very opposite and fully reflects the main obligation. In the case of an abstract guarantee, the bank cannot raise objections to the main contract for works (for example). On the other hand, the bank is obliged to apply these objections to the very essence of matter where the suretyship is used even when the securing document does not contain any such provisions or when it contains contrary provisions.

In some countries, guarantees are issued in the form of suretyship (surety bond, *Bürgschaft* or *cautionnement*) even by the banks (as in Germany and France). The French wording of guarantees differs depending on their particular type (there are five types altogether) which is why French banks require a copy of the contract from the contractor so that the type of guarantee matches the respective contract.

A similar form of security is defined by the rules issued by the *Uniform Rules for Contract Bonds* (ICC publication No. 524; abbreviated 'URCB' or 'the Rules'). These Rules have been drawn up by an ICC Working Party of Members representing the Commission on Insurance and the building and engineering industry for worldwide application in relation to contract bonds, i.e. those bonds creating obligations of an accessory nature, where the liability of the guarantor is conditional upon an established default on the part of a contractor under the contract which is the subject matter of the relevant bond. These Rules are often used by insurance companies. The guarantor has to pay from their guarantee only when the ordering party has breached the contract. The guarantor does, however, have the right to apply any objections available to them by the contract against the ordering party.

A particularity of the 'contract bond' is that the guarantor has an 'option right'. On finding that the contractual obligations have actually been breached on the ordering party's side (and that the beneficiary is entitled to payment), the guarantor may either pay out the guarantee or complete the contract. Such security will not enable the beneficiary to receive payment immediately. The beneficiary is, therefore, in a less advantageous position than with a guarantee payable on the first demand and without any objections.

Should a payment from a guarantee be made, a certificate of an (independent) third party or a guarantor's certificate must be submitted along with the relevant claim. Another option is submission of a final court award. Whenever a guarantee is to be issued in accordance with these Rules, it has to be considered what option is to be selected by the parties should the guarantee be used and formulate the conditions upon which the guarantee can be applied accordingly. No matter which certificate the contracting parties prefer, they can refer any potential dispute to a court, if necessary.

These Rules are intended for insurance companies. In some countries, the banks cannot provide them because they cannot accept, for example, completing the works in place of the contractor because the governing law restricts them to providing the financial guarantee only. Furthermore, it would be impractical for the bank to examine if contractual obligations have really been breached.

In the US, large construction projects are frequently secured by means of a suretyship in the form of a 'surety bond'. These securities are issued by companies specializing in this field. Owing to the traditional restrictions on bank guarantees, a *stand-by letter of credit* is preferred in the US and functions the same way as a bank guarantee payable on first demand.

16.8 Stand-by letter of credit

Stand-by letters of credit are essentially the same instrument as the bank guarantee with some small differences. These are discussed below. Both are payable on demand with the former originating in the United States. There, the volume of stand-by letters of credit issued significantly exceeds the amount of foreign transactions. Southeast Asia and South America also are other areas where the stand-by letters of credit are used to a significant extent.

What's the difference between guarantees and a stand-by letter of credit? The latter requires substantially the same obligation as an abstract guarantee – being irrevocable, independent of the contract to be secured, abstract and payable against the beneficiary's statement on 'default' – a 'negative document' certifying, e.g. in the form of a statement, that the contractor has not fulfilled their obligations under the contract. The differences therefore relate to the format, terminology used, rules they are subject to and some of the techniques linked to the letters of credit.

There are standard rules for stand-by letters of credit such as the Uniform Customs and Practice for Documentary Credits provided by the International Chamber of Commerce (UCP 600) or the International Stand-by Practices (ISP98).

16.9 Securities under FIDIC forms

FIDIC forms include a number of sample forms of securities, attached as an appendix. From among the individual FIDIC forms, the largest spectrum of activities is covered by the Design, Build and Operate form (First Edition 2008; the 'Gold Book') and EPC/1999 Silver Book. Thanks to standardization resulting from FIDIC's cooperation with the International Chamber of Commerce (ICC), the guarantees used in these forms come from the Uniform Rules for Demand Guarantees provided by the ICC.

The Tender Security is the first guarantee (normally included in the FIDIC forms), corresponding to the tender guarantee, as specified above. This guarantee is used to make the contractor (as a participant in the tendering process) comply with the tendering rules. This forces them to cooperate with the employer during the course of the tender, to timely enter into the contract for execution of the works, and to submit a Performance Security, discussed below.

In the case of an Advance Payment Guarantee the employer will provide the contractor with a down payment for project mobiliszation requiring a security of the down payment. The guarantee takes effect once the contractor receives the advance payments – the level of which is gradually reduced on the basis of the parts of the works completed and already paid.

Performance Security is provided in different versions under FIDIC forms. The first option is to issue the Performance Security as a Demand Guarantee, i.e. the guarantee payable on first demand in accordance with the URDG rules. The employer/beneficiary is authorized to draw from this guarantee whenever the contractor breaches their obligations under the contract. The employer only has to specify such a breach in compliance with the relevant rules but does not need to prove it. Alternatively, issue of the Performance Security as a Surety Bond in the form of suretyship may be made by the bank in the role of guarantor. The Surety Bond is governed by the Uniform Rules for Contract Bonds. Performance Security is governed by Sub-Clause 4.2 of the FIDIC forms where it is stipulated, for example, that the contractor shall obtain (at their cost) a performance security for proper performance, in the amount and currencies stated in the appendix to tender. The contractor shall deliver the performance security to the employer within 28 days after receiving the letter of acceptance and shall send a copy to the engineer. The performance security shall be issued by an entity from within a country (or other jurisdiction) approved by the employer, and shall be in the form annexed to the particular conditions or in another form approved by the employer. The contractor shall ensure that the performance security is valid and enforceable until the contractor has executed and completed the works and remedied any defects. If the terms of the performance security specify its expiry date, and the contractor has not become entitled to receive the performance certificate by the date 28 days prior to the expiry date, the contractor shall extend the validity of the performance security until the works have been completed and any defects have been remedied. The employer shall return the performance security to the contractor within 21 days after receiving a copy of the performance certificate.

Under Sub-Clause 4.2:

> Employer shall not make a claim under the performance security, except for amounts to which the employer is entitled under the contract in the event of:
>
> (a) failure by the contractor to extend the validity of the performance security as described in the preceding paragraph, in which event the Employer may claim the full amount of the performance security,
> (b) failure by the contractor to pay the employer an amount due, as either agreed by the contractor or determined under Sub-Clause 2.5 [Employer's Claims] or Clause 20 [Claims, Disputes and Arbitration], within 42 days after this agreement or determination,
> (c) failure by the contractor to remedy a default within 42 days after receiving the employer's notice requiring the default to be remedied, or
> (d) circumstances which entitle the employer to termination under Sub-Clause 15.2 [Termination by Employer], irrespective of whether notice of termination has been given.

The Retention Money Guarantee and the Maintenance Retention Guarantee are also dealt with by the FIDIC forms. The latter is used in the Gold Book to cover events where the contractor does not properly meet their duties to remedy defects and maintain the works. In their application for payment, if any, the employer must note that the contractor has breached their obligation and also in what way, i.e. what is the nature of the defect. This guarantee reflects Sub-Clause 14.19 of the conditions of contract under which 5% of the payments are retained in favour of the maintenance fund.

The payment guarantee by the Employer is to secure the employer's payment in case of a delay.

The parent company guarantee is a statement of a mother company (or another company within the ownership structure) as guarantor. This company guarantees that the contractor will duly perform. Should the contractor fail, the mother company will act as the contractor's guarantor. Issue of this parent company guarantee tends to be a precondition upon which the contract between the employer and the contractor can be entered into.

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17 Civil Engineering Works: Infrastructure Construction Projects

17.1 Investments in developing countries

In recent years, a number of post-communist countries have joined the European Union (EU) or are seeking to do so. The new member states are mainly from the Central and East European (CEE) region and many have experienced a surge in large investments in infrastructure projects co-financed by the EU, the European Investment Bank (EIB) and the World Bank. According to the Procurement Guidelines of the international and European financing institutions, tenders financed by them are, by definition, open to international competition for projects.

Interestingly, there is a remarkable difference between the tenders financed by international financial institutions and tenders financed by the European institutions, i.e. the EU and EIB. Both seem to be at the root of contractual problems in many CEE countries. Whereas the World Bank and other international financial institutions that provide co-financing for infrastructure construction projects require well-established sample forms of contract for works to be used, the European institutions impose this condition only with respect to their financial support for 'third countries' (i.e. outside of the EU). Within the EU, lawmakers – until recently – did not take any precautions. The underlying reason for such an approach is that well-established local standard forms already existed in Western Europe, for example, the ÖNORM B 2110 (Austria), the VOB/B (Germany), the AB 92 and ABT 93 (Denmark), the CCAG (France and Belgium), the DPR 207/2010 (Italy) and the UAV 1989 and 2012 (the Netherlands). Hence EU lawmakers assumed that sample forms were only needed in developing countries.

FIDIC standard forms were introduced to the CEE region in late 1990s, given the massive amount of international and European financing of construction projects. A lack of fair and adequate local sample forms also played a role in their rapid introduction to the CEE. Under the Phare, Tacis and ISPA programmes, EU and EIB financiers scrutinized ex-ante that the FIDIC standard forms (generally the Red and Yellow Books) were being used in the proper way. FIDIC forms are

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international benchmarks for their efficient risk allocation, tradition, respect, fairness and a balanced approach to business.

The authors of the FIDIC forms have intentionally set the risk allocation in most of the standardized conditions to be fair and balanced, the exception being the FIDIC standard form for privately negotiated EPC Turnkey Projects (EPC/1999 Silver Book). The balanced approach, as incorporated in the FIDIC standard forms for Construction and Plant and Design-Build (the 1999 Red and Yellow Books) is deemed appropriate in developed countries as giving the best results and providing the lowest transport infrastructure project costs in the long term.

However, employers in CEE region tend to modify the standardized FIDIC risk allocation to the disadvantage of contractors. Such modification of standard risk allocation usually causes the types of problems described in the *Check List for One Sided Contracts* (JICA, 2011), i.e.:

- bid failure and disruption of project implementation;
- non-participation in the bid of conscientious and capable contractors;
- contract award to a bidder who fails or is incapable of estimating the risks properly;
- poor construction quality and delay of the work due to lack of risk contingency;
- undermining the relationship of mutual trust and respect between the parties;
- unsubstantiated claims from the contractor;
- frequent disputes between the employer and the contractor;
- higher bid prices and/or large discrepancies between the bid and the final price;
- in extreme cases, the eventual termination of the contract.

Four factors are mentioned in the above list which could serve as motives for making a contract one-sided when preparing the contract documents: (1) the employer has not prepared sufficient budget; (2) lack of employer understanding of the terms and conditions, including appropriate allocation of rights and obligations, the capability of contract management and sense of ownership; (3) lack of time and calculation of costs required to create the contract documents; and (4) slavish adherence to domestic laws, regulations and domestic procedures (JICA, 2011).

Lessons learnt in developed countries can help avoid or solve similar problems in developing countries lacking sufficient infrastructure or where large infrastructure projects are planned for the future.

The following text will compare the traditional treatment of construction project risks in developed countries such as the United States of America and the United Kingdom against the practices encountered in the CEE. Examples will illustrate what kind of consequences a distorted standard form of risk allocation may have.

17.2 The approach to the risk allocation in the United States

According to the US Department of Transportation (http://international.fhwa.dot.gov):

> The goal of an optimal allocation of risk is to minimize the total cost of risk on a project, not necessarily the costs to each party separately. Thus, it might sometimes seem as if one party is bearing more of the risk costs than the other party. However, if both owners and contractors take a long-term view and take into consideration the benefit of consistently applying an optimal method to themselves and to the rest of their industry, they will realize that over time optimizing risk allocation reduces everyone's cost and increases the competitiveness of all parties involved.

Poor risk allocation is one of the most frequent reasons for construction project litigation in the US.

In the US, individual transport infrastructure employers compile their contracts according to standard risk allocation manuals. For example, the *AASHTO Guide Specifications for Highway Construction* is widely used in general contracting as a delivery method. Numerous precedents and well-established adjudication practices of the courts confirm the advantages of efficient risk allocation. While proven to be effective, standard risk allocations are not standardized procedures with completely universal application. There is no standardized procedure that would eliminate the need to systematically identify the hazards and analyse the risks inherent to every particular construction project. No standardized procedure will replace a prudent employer's ability to determine priorities (such as speed, price, standard, minimization of environmental impacts, and so on) when preparing a project.

The US Department of Transportation instructs that risk allocation should always be based on the following principles:

- Risk should be allocated to the party best able to control it. The employer, for example, will not burden the project with a risk surcharge in the contractor's contract price when retaining the risk of unforeseeable ground conditions. This is also confirmed by the recent award in Metcalf Construction Co. v. United States, (U.S Ct. of Appeals for the Federal Circuit, Case No. 2013-5041, Feb. 11, 2014) where the U.S. Court of Appeals for the Federal Circuit reversed a decision of the U.S. Court of Federal Claims that had permitted the Government to shift risk of unforseeable ground conditions to the contractor via contractual disclaimer in a Design-Build contract. The aim of the disclaimer was to deny any chance of contractor relief on a differing site condition claim. It is a clear signal to public employers that it is not acceptable to shift unforeseeable and uncontrollable risk to the contractor. It is also a confirmation of the necessity of balanced efficient risk allocation even in Design-Build contracts. This key decision comes at a critical time as the government (perhaps due to economic recession), seems to have adopted aggressive strategies to avoid paying reasonable contractor claims (for more information see http://www.constructionrisk.com).
- Risk should be allocated in accordance with project priorities. Take, for example, the situation where short completion time is a priority. The employer may then allocate some other risks beyond the standard to the contractor (such as obtaining construction permits).
- To share a risk where it is convenient. Take, as a good example, extremely adverse climatic conditions where an 'extremely bad weather risk' is to be shared between the parties.

Some (or all) of the risks beyond standard can be more conveniently allocated to the contractor where there are no major risks that would jeopardize a particular project and where a detailed risk analysis has been done. Of course, these risks have to be identified, or it must be at least possible to assess these risks independently. Any indeterminate requirement or general, illogical, risk shift will result in a non-assessment of the risk. In such cases, the setting of a contract price comes down to a mere guess. Such an initial condition cannot then lead to a successful construction project as it also complicates the tender process. Tendering may then take an intolerably long time because of a large number of requests by tenderers following the terms of reference in public procurement projects. Sometimes, a tender will have to be cancelled and announced anew in such situations. The resulting damages and impossibility of using, for example, a newly built road will ultimately burden the taxpayer.

17.3 The approach to the risk allocation in the United Kingdom

For many years, substantial efforts have been made in the UK to find a suitable model for transport infrastructure tendering. This was in response to projects inherently suffering from prolongation and price increases and long-term industry-wide concern. Many strategic steps have since been taken to make changes and provide solutions to these problems within the construction industry.

One of the key points was the development of a new form of contract called the New Engineering Contract (NEC) in the 1980s. Prepared by engineers, this contract is widely regarded as providing solid support for good project management. This form is commonly used in most large construction projects commissioned by public employers in the UK. The Crossrail project in London and the London 2012 Olympic Games are two recent examples. There are several, optional, NEC sample forms. The target price form is used most frequently because it has proven itself to save money (actual price below the level of the agreed target price) and minimize losses (price increases in excess of the agreed target price). This form is based on the pain/gain mechanism where the benefits and losses are shared between the employer and the contractor. NEC sample forms motivate and encourage cooperation between the participants. Moreover, these sample forms are a proven measure against employer-contractor 'wars' which, in every case, have adverse impacts on projects.

With an NEC sample form, the programme (time schedule) is used as a key project management tool and mutual compensation events are presented and defined in a clear, straightforward manner.

In the UK, there is also a unique standard used to manage delay and disruption-related issues during construction project realisation known as the SCL Protocol (the Delay & Disruption Protocol, published by the United Kingdom Society of Construction Law; free to download at http://www.scl.org.uk/resources), which can be made a part of contract via a reference.

Additional instruments are available, for example, Early Contractor Involvement (ECI), i.e. an effort to make use of the contractor's experience and capabilities as early as at the public contract pre-awarding phase. Use of expert systems such as Building Information Modelling (BIM), i.e. the use of software modelling of a construction

process as a whole, providing an ultimate over-view of the works being executed and allowing the utmost cooperation between all participants.

Several strategic resolutions have taken place at the government level, including a special Act regulating construction in the UK. For example, *The Housing Grants, Construction and Regeneration Act* (1996) ('the Act'). At Section 108, the Act compels all parties who are parties to a construction contract to refer any dispute to adjudication as a first step. This is a mandatory provision by operation of law that cannot be changed by contract. During the dispute process, parties must adhere to short (and strict) time limits. For example, a dispute must be adjudicated within 28 days of notification of the dispute. If a party fails to comply with the adjudicator's resolution, the other party can compel performance through a streamlined litigation process at the Technology and Construction Court – a court dedicated to resolving disputes related to construction contracts. This court, in most instances, quickly confirms the previous adjudication award.

Construction of airports by Patrick Kain (South Africa)

Airports provide the infrastructure for landing and taking off of aircraft and for processing of passengers and cargo before loading or unloading onto aircraft. They can vary in size and scope from small gravel strips with basic facilities for passengers, which are typically for domestic flights in remote areas to large international airports that accommodate the Boeing 787 Dreamliner and the Airbus A380 aircraft.

Nationally, civil aviation authorities control aviation including airports. These authorities refer to International Civil Aviation Organization (ICAO) and/or the United States' Federal Aviation Authority (FAA) rules and regulations for guidance. While with the exception of the United States (where FAA compliance with regulations is mandatory), in other countries, these FAA and ICAO provide recommendations to national regulatory authorities; however, compliance with ICAO and the FAA regulations and standards is generally accepted as being mandatory.

Airports are complex infrastructure systems that include runways, taxiways, parking aprons, airfield lighting, refuelling facilities, passenger terminal buildings, cargo terminals, hangars, control tower building, car parks and other facilities. Larger airports also provide air-bridges to facilitate embarkation and disembarkation procedures for large aircraft. These are supported by communications, information, security and safety systems, at various levels and to different groups of airport operatives and passengers.

Interdependency of systems is complex and requires good coordination to ensure that, for instance, in the case of passenger terminals, passengers and baggage are processed and managed in such a manner to ensure that from the time of check-in through departure and arrival at their destinations, passengers and baggage are handled efficiently and that passengers and baggage arrive without unnecessary problems.

The development of a new airport requires detailed planning and inputs from a wide variety of expertise including environmentalists, geologists, meteorologists, pavement specialists, architects, structural engineers, electrical engineers, mechanical engineers, electronics specialists, safety and security experts and communications specialists among others. It also requires good coordination and consultation with relevant stakeholders from the planning process through design and construction right through to final commissioning.

While terminal buildings are the most visible facility at airports and terminals receive the most attention from the press and public, it is significant that terminal buildings represent only 20 – 30% of the total infrastructure cost at most airports.

Slopes and obstructions on runways are severely restricted. Large areas of flat ground are required in order to conform to these stringent requirements. This is a problem and in many cases airports are built on poor ground with high water tables or even in swamplands, which can lead to high development costs, for example, where runways are built on poor ground, special techniques are needed, such as replacement of poor soil or placement of an interlocking pioneer layer over soft soils and provision of subsoil drainage. This coupled with high wheel loading and a severe limitation on time available for future maintenance means that airport pavement design is often complex and requires expert treatment. A major risk here is unforeseen soil conditions that could lead to major claims from paving contractors and on foundation works for terminal buildings. Therefore, detailed geotechnical investigations must be undertaken prior to design works if cost and schedule overruns due to unforeseen site conditions are to be avoided.

Depending on the size of the airport, and the need for multidisciplinary expertise, the project may be awarded to a single contractor or split into a number of discrete packages. When the project is split into a number of separate packages, a project manager coordinates work on the various contracts while a construction manager manages each work package. The overall project is managed by a project manager who is responsible for procurement of the various contract packages, monitoring the works and ensuring that cost and schedule are maintained and for other aspects of the development such as land acquisition, co-ordination with airlines, service providers, concessionaires (shops, restaurants, lounges, etc.) and reporting to the airport owners.

The construction managers are responsible for their individual construction packages and delivery to the project manager. The other option for a large airport is to award as a design and build project.

The different FIDIC contract documents are ideal for dealing with the different delivery methods mentioned above. The 1999 Red Book along with the sub-contract form would be appropriate for smaller airports and possibly even medium-sized airports; The 1999 Yellow Book would be appropriate for Design and Build on larger airports alternatively, the Red Book or a combination of the Red and Yellow books would be appropriate if the development is done under a series of separate contracts under the direction of a dedicated project manager. Because of the nature of airports, it would be unusual to use the 1999 Silver Book except perhaps for fuel storage facilities that are generally not provided directly by airport authorities but by fuelling companies under licence or on a concession basis.

Airports are subject to change over time in order to accommodate either larger aircraft or increase in traffic volumes or to be upgraded to facilitate night operations. A number of measures would be required to accommodate these changes:

- strengthening of runway pavements;
- lengthening and widening of runways;
- provision of additional taxiways;
- extensions to aircraft parking areas;
- provision of airfield lighting;
- provision of additional fuelling facilities;
- extensions to terminal buildings.

While extensions to terminal buildings can be carried out with some inconvenience to passengers, other extensions and major repair works to runways, taxiways and aprons can involve disruption to air traffic and ground movements. For this reason, much of this work is scheduled at night when those areas are closed to traffic.

Moreover, work on runway pavements, particularly on airports with only one runway, must be carried out in such a manner that the runway is available for use the following day after a safety check of the works to ensure that the runway is safe for aircraft. Contracts must also include clearance of equipment, materials and workers from work areas in cases of emergency so work is planned in small sections to facilitate rapid clearance of the site and restoration to an operational state.

For these reasons, it is necessary to include special conditions to cover these provisions. This is easily done in FIDIC by making use of the 'conditions of particular application'; however, it is found that such provisions are sometimes included (wrongly) in the 'preliminary and general' section of the specifications.

For all airport works, but particularly refurbishment or extension works, it may be desirable to include a staged completion requirement in the contract. This is easily achieved with FIDIC as Sub-Clause 10.1 provides for taking over of the works in sections and for different defects notification periods for works taken over in sections.

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17.4 The approach to the risk allocation in Central and Eastern Europe

Established, experienced lenders respect and promote in their guidelines where projects financed by them abide by the principles of fairness and appropriately allocate risk. For example, the EIB requires that 'the contractual conditions are fair and reasonable', the EBRD states:

> Contract conditions shall be drafted so as to allocate the risks associated with the contract fairly, with the primary aim of achieving the most economic price and efficient performance of the contract … Wherever appropriate, standard forms of contract incorporating generally accepted international conditions must be used

The World Bank states, 'The conditions of contract shall provide a balanced allocation of risks and liabilities.'

Government attempts at risk aversion are explicable as its agencies are liable and responsible to other authorities (such as regulators) for any expenditure arising under such contract. This often results in attempts to minimize the risks by shifting them to the contractor. This risk aversion may be the specific reason for recent

issues which plague public procurement such as delays, cost overruns and lack of technical-executive contractual know-how in monitoring project implementation (Banica, 2013).

Some employers in the CEE procure public projects to be financed from EU funds with modified FIDIC contract forms. These sample forms tend to disadvantage the contractor through onerous provisions that dramatically skew the standard risk allocation.

The main trend was to replace the provisions of the FIDIC CONS/1999 Red Book or FIDIC P&DB/1999 Yellow Book with the provisions of the FIDIC EPC/1999 Silver Book. In this way, employers could deliberately avoid and shift the standard risk allocation to their advantage. Employers often did so on the advice of inexperienced lawyers or, in some cases, deliberately. Concerning legal advisors, understanding the legal and practical aspects of construction is essential to drafting a good document. The goal, after all, is to construct the project with as few problems as possible. The secondary goal is to protect the client (Sabo, 2013).

In many cases, employers were not aware of the long-term, negative consequences on particular projects and the construction industry as a whole. For example, the FIDIC EPC/1999 Silver Book, due its risk allocation concepts designed for EPC, is inherently unsuitable for use in large transport infrastructure projects. Furthermore Sub-Clauses in Silver Book such 4.12 or 5.1 are invalid in some jurisdictions (Kus, Markus and Steding, 1999).

The following is a summary of some typical interventions/modifications of risk allocations witnessed in the CEE countries and worldwide.

17.4.1 Restricted competencies of the Engineer

Execution of the engineer's rights and duties consists concurrently of two agendas. The first is to act on the employer's behalf. The contractor may thus perceive the engineer's conduct as an action or inaction of the employer (such as the engineer's instruction regarding a variation). The second is that the engineer is a neutral third party who is professionally required to keep a fair balance between the contractor and the employer (such as during resolution of disputes, certifications, and so on).

In practice, employers try to restrict the engineer's powers, for example, by making the engineer's decisions subject to employer approval, or they withdraw disobedient engineers and replace them with obedient ones. This process starts at the contract phase between the employer and the engineer. Terms are agreed upon which imply the engineer is in fact the employer's representative. These steps often result in a paralysed system of project administration and management. As such, the engineer will become the one acting on the employer's behalf and the project will lose the advantages that come from the execution and purpose of the engineer's position. Whether the contract administration exercised by such a person is efficient or inefficient depends on the capabilities and good faith of the individuals in their positions.

The practice went so far and cases were encountered where the engineer was used as a tool for bad faith behaviour by the employer. In such situations, variations are typically instructed by the engineer to be later declared invalid by the employer for lack of empowerment of the engineer (or conflict with public procurement law). Payments previously made for those variations were retrospectively offset by the

employer against future payments for works done, with the effect being a loss on the contract or, in some cases, bankruptcy of the contractor.

However, different conditions were agreed in the main contract for works between the employer and the contractor (where the engineer had to be fair) and in the professional service agreement between the employer and the engineer (where the engineer was under threat of contractual penalties to avoid contractor claims). This further led to claims and lawsuits for damages by contractors against engineers.

17.4.2 Inefficient risk allocation

FIDIC EPC/1999 Silver Book risk allocation is used in transport infrastructure construction projects despite the fact that the use of general contracting (FIDIC CONS/1999 Red Book) or DB (FIDIC P&DB/1999 Yellow Book) is more efficient.

There are, for example, risks of errors in setting-out (Sub-Clause 4.7), wrong site data (Sub-Clause 4.10), unforeseeable physical conditions (Sub-Clause 4.12), and errors in the employer's requirements (Sub-Clauses 1.9 and 5.1) that are allocated to the employer under CONS/1999 Red Book and P&DB/1999 Yellow Book. Employers change these clauses and allocate risks caused by their own bad project preparation or negligence to the contractor by not allowing the contractor to claim any additional payments or extensions of time for completion in cases of risk realization. In doing so, the employer insures against their own inability to prepare the contract properly and on a timely basis by allocating the risk of defective contract preparation (and its consequences) to the contractor.

Sometimes, employers need to commence projects at any cost and without sufficient preparation. Reasons may be financial (conditions given by the lenders or subsidies providers), political (complete the project before the next elections), economic (the urgent need of a road, tunnel or bridge), dishonesty (corruption), international obligations (a treaty on infrastructure development), fear (lack of responsibility) or intentional avoidance of responsibility.

Another problem is that public employer had to choose consultants and designers on the basis of lowest price. Such procurement leads again to errors in tender designs and bad project preparation.

The employer may see a shift in risk allocation as an appropriate way to solve the problem of lack of preparation and the best way how to avoid responsibility. In practice, the employer will not achieve its goals in this way and projects affected by defective risk allocation will almost certainly end in trouble and dispute. Without efficient and fair contractual remedies, the contractor who accepted the onerous contract with inefficient risk allocations will defend potential claims under general principles of law. In civil law countries, for example, the principles of unjust enrichment and good faith protection will very likely be argued against the employer. Translated into the language of law, the absurd risk allocation may then be called unreasonable limitation of responsibility. Another (even worse) scenario may await the employer: the contractor will terminate the contract and abandon the project after a risk is realized that could not have been controlled or accounted for in their bid price. The final, common scenario is one where the contractor goes into bankruptcy because of risk realization. The employer is then left to 'clean up the mess' of conducting a new tender, resolving difficulties with warranties, and so on.

Take, as an example, the approach of a Romanian employer for a transport infrastructure public contract who went so far as to allocate the risk of unforeseeable physical conditions to the contractor even when there was not enough time to do the site inspections and explorations during tender preparations. This employer is exclusively assigning the liability for defects in their own design documents by making the strict wording of the FIDIC EPC/1999 Silver Book even more rigorous against the contractor. In this case, the employer removed exemptions of contractor liability (Sub-Clause 5.1) from the tender requirements. As such, the contract becomes impossible to price and evaluate and lacks transparency from the outset. The project is almost certainly doomed to failure – either ending in dispute or premature termination.

17.4.3 Limitation of contractors' claims

Limitation of the contractors' claims for additional payments and extensions of time take the form of either complete elimination or modifications in their parameters. Here, the matter in question is nothing more than a shift in risk allocation. For example, the employer will try to compensate their failure to meet basic obligations (such as to properly and timely provide the contractor with access to the site) by assigning the adverse implications to the contractor. In this way, they relieve the contractor of the possibility of claiming an additional payment or confining the claim to payment of direct costs regardless of additional lost profit and/or overhead surcharges.

17.4.4 Contractual determination of a maximum total contract price

Another extreme is in defining the upper limit of the total contract price as, for example, 110% of the tender price (except for adjustments or changes in legislation and cost). Guaranteed like this, such a maximum price (inherent in CM At-Risk projects) is obviously unreasonable in risky transport infrastructure projects. Again, it is likely that such provisions would be deemed void by a court in a dispute and that the contractor would finally succeed with their claims. Furthermore, such a provision presents a great risk in terms of the possibility of efficiently managing the project and bringing it to a successful conclusion – particularly in connection with the lowest bid price being the only criterion for success in the respective tender.

The Romanian experience by Claudia Teodorescu (Romania)

FIDIC forms are also used as contract conditions in Romania in public procurement projects for roads and bridges by the Romanian National Company for Motorways and National Roads, which is part of the Romanian Ministry of Transport (RNCMNR). For the purposes of this example, the RNCMNR will be referred to as 'the employer'.

From 2000 to 2010, Romanian authorities worked mainly with the Red Book (First Edition, 1999) because Romanian legislation (relating to design and quality in construction and

finance) requires the completed works to be measured, using unit and item prices that cannot be varied.

However, the employer has constantly faced several problems in developing its proposed projects because of:

- slow procedures to ensure site access according to Sub-Clause 2.1 [*Right of Access to the Site*];
- errors in the initial setting-out data under Sub-Clause 4.7 [*Setting Out*];
- mistakes in site data under Sub-Clause 4.10 [*Site Data*];
- the design needing adjustment(s) to become applicable to the actual site conditions under Sub-Clause 17.3 (g) [*Employer's Risks*]; and
- slow procedures in obtaining permits under Sub-Clause 2.2 [*Permits, Licences or Approvals*].

One other consistent impediment has been utility companies interfering with the works. As utilities are privately owned, utility owners have to be involved directly in the design and relocation of their networks (water, gas, oil and, mainly, electricity). These third parties are mostly foreign companies with their head offices outside Romania. Approval procedures usually go on for months or years. There are no clear, uniform procedures to be followed by contractors and utility owners change requirements at their leisure, sometimes even imposing on the employer and contractors conditions outside the legal framework or with disregard for the law.

Preliminary archaeological investigations and site clearances should be carried out by the employer. If, following these preliminary investigations, information about important archaeological remains is revealed, the employer should not embark on ordinary site clearance.

Sub-Clause 4.24 (*Fossils*) should only apply to unexpected findings in the area of the works about which no prior data was available. Passing responsibility for archaeological investigations and site clearance to the contractor usually leads to claims which cannot be easily and strictly quantified, since it depends upon specialized third parties in this field, for example, archaeologists and museums.

Contractors have also been facing delayed payments for work executed due to bureaucracy and legislative restrictions. Up to six months' delay in payment for works certified by the engineer as overdue contractual time is not exceptional. For executed and certified works, the employer has actually increased – by up to 80 days – the period in which they are allowed to pay from the date of approving the interim payment certificate. Moreover, the period for verifying the interim certificate by the employer is not specified in the specific conditions because of changes to the FIDIC Conditions made by the employer.

Furthermore, cases occur when this period is extended by unofficial requests to the contractor not to bill for payment or by the employer withholding payment for supplementary verification on various formal grounds. This also applies to payment for the engineer's services.

These practices often lead to even the most diligent of contractors hiring specialized companies for claims support and reducing productivity (including demobilization of resources) in an attempt to overcome delay in payments. Such hardships faced by contractors mean that they become more concerned with claims management than with the progress of the works.

These issues have resulted in a series of claims referred to DABs and, eventually, arbitration. However, under the Arbitration Rules of the International Chamber of Commerce, these procedures are slow and costly. This consumes the resources of both the contractor and employer and does not guarantee success or satisfactory compensation.

In addition, the Romanian Government considered it necessary to introduce the FIDIC Conditions as internal legislation so they will be accepted and generally applied both by national and local authorities for major infrastructure projects. This is to ensure a more uniform approach for construction purposes (Decree No. 1405/2010 of 28 December 2012 'Concerning Approving the Use of the Contractual Conditions drawn up by the International Federation of Consulting Engineers ("FIDIC") for Investment Objects in Transport Infrastructure Financed by Public Funds and of National Interest').

In recent years, employers (in an attempt to minimize errors and gaps in their tender documentation caused by insufficient time for bid preparation) thought of the solution offered by the FIDIC Yellow Book (First Edition, 1999). In this form, the design and all related risks are allocated to the contractor. These conditions were selected by employers as it takes less time to prepare the tender documentation and because of the imperative demand to start some projects close to the terminal dates of the Financing Memoranda. The employer had also included a number of special clauses in these contracts which further altered the usual distribution of risks between the two parties.

Such contracts do not follow the principles of the FIDIC Yellow Book as the employer is trying to limit:

- its risk for delayed expropriations under Sub-Clause 2.1 [*Right of Access to the Site*];
- its responsibility for errors in the setting-out data under Sub-Clause 4.7 [*Setting Out*];
- its responsibility for errors in site data under Sub-Clause 4.10 [*Site Data*];
- price increases for unforeseen physical conditions under Sub-Clause 4.12 [*Unforeseeable Physical Conditions*]. Furthermore, this Sub-Clause has been completely modified so that it does not allow any claims for time and costs for unforeseen circumstances or events.

With this shift in risk, the employer has changed a balanced Yellow Book risk allocation to a Silver Book risk allocation that is unsuitable for road and bridge (or underground) construction.

In terms of contract price determination, the employer is not allowed (under Romanian legislation), to stipulate payment as a lump sum or percentage of the contract price according to the executed works. The employer has to demand accurate quantities and measurement. There is no proper measurement method for the correct valuation of the works as executed. Romanian legislation states that there must be a bill of quantities and that contractors are fully responsible for the unit prices (Order 863/2008 of 2 July 2008, Instructions for the Application of Certain Provisions of Government Decision No. 28/2008 regarding the Frame-Content Approval of Public Investments Technical-Economic Documentation, as well as the Structure and Methodology of the General Estimate for Investment Objectives and Intervention Works). This leads to the conclusion that a lump-sum contract cannot be validly used in the construction domain in Romania as it is against the law.

Thus, the employer is forced to alter the General Conditions of the FIDIC Yellow Book through Particular Conditions to correlate with local legislation by introducing restrictions specific to the FIDIC Red Book. For example, Sub-Clause 14.1 [*The Contract Price*] has been modified to include the submission by the contractor of a detailed, precise, complete bill of quantities and price breakdown for all items of works:

> (c) Within 14 days from the approval of the Technical Design (produced in accordance with the Technical Specifications) by the Technical Economic Committee of the

> employer, the contractor will issue to the engineer, the Bill of Quantities detailed per work categories, containing the Unit Price per each Item of works. The summarised amount of all Items (Quantity * Unit Price) in the Bill of Quantities for each category of works must be (at most) equal to the Value included in the Cash Flow for that works category.
> (d) Also, the contractor will submit a detailed Breakdown for each Unit Price within the Bill of Quantities for the Works. The Breakdown must include the costs for manpower, materials, equipment, transport and percentages for indirect costs and profit. The engineer shall use this Breakdown to evaluate Modifications of Unit Prices and New Prices according to cl. 13.3, but its use will not be limited to that.

If the contractor refuses to provide this, the engineer will usually be unable to perform all their duties and prevented from carrying out the verifications, evaluations and analysis required by the contract.

Furthermore, employers introduced a provision in Sub-Clause 2.1 [*Access to Site*] which allows them to grant access:

- 28 days after the commencement date;
- by sections, gradually.

The contractor will not be entitled to any claims on the grounds of access to site being granted by sections: not only have the provisions concerning entitlement to claim been deleted, but there is a clear amendment stating the contrary: 'The Contractor will not issue any Claim on the premise that access to site is to be assured gradually, by sections.'

When faced with these restrictive special conditions of contract – i.e. the modified FIDIC Yellow Book – and also with site problems such as incomplete expropriation, lengthy procedures for clearance of forest areas, tendered hydrological and geological reports that do not contain accurate data about the structure of soil or physical and climatic conditions in the region of the project, contractors gradually decreased resources used and productivity in an attempt to reduce extra costs and to maintain production to match the employer's financial capability. Instead of proper project management, delays in the completion of the projects and claim management are encountered because of concurrent delays caused by employer and contractor.

In addition, the engineer's role has been drastically reduced in these contracts, both through the special conditions and through specifications and supervision contracts imposed by the employer. The engineer's actions regarding approvals and determinations are contingent upon the employer's final approval. Payment procedures, methods of calculation and certifications, acceptance of supporting documents are frequently a 'face-off' area for the employer and contractor, with the engineer caught in the middle.

Situations have occurred where the employer simply produced a Notice under Sub-Clause 15.1 [*Notice to Correct*] and officially instructed the engineer to sign and deliver it to the contractor, without the right to correct, modify or state their point of view. This kind of approach leads to numerous misunderstandings and misguided actions with an unpredictable effect on contract management.

Contractors sometimes consider certain contractual documents as being approved simply by their submission to the engineer. For example, according to Sub-Clause 8.3:

> If, at any time, the engineer gives notice to the contractor that a programme fails (to the extent stated) to comply with the contract or to be consistent with actual progress and the contractor's stated intentions, the contractor shall submit a revised programme to the engineer in accordance with this Sub-Clause, within 7 days.

The contractors never correct, complete or in any way revise the programme of works in accordance with the engineer's comments and observations, but simply issue a programme which further includes mistakes of a technical, procedural, economic or contractual nature. This approach is meant to make it impossible for the engineer to conduct a thorough analysis of the progress of works.

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17.5 The Polish experience

Here are two examples of the Polish experience.

FIDIC forms and contractual relationships in Poland by Aleksandra Marzec (Poland)

FIDIC forms of contract are widely used in Poland, especially in large, public investments co-financed by the EU. Consequently, the 'FIDIC employer' is very often a public government authority. The main public employer in the field of large motorway and road construction projects is the General Directorate of Roads and Motorways (GDDKiA) which is a procurement agency of the Ministry of Infrastructure (currently the Ministry of Infrastructure and Development). The 'FIDIC contractor' is a privately owned foreign or local construction company.

GDDKiA is a central government administration authority, established by virtue of the relevant legal act and exercising the state's authority by realizing the statutory administrative tasks which have been given to it. While performing its administrative tasks, GDDKiA enters into relationships under administrative law with both citizens and other legal entities. Such relationships are characterized by the superiority of one party (the government body) and the inferiority of the other party (citizen, other legal entity). When organizing public procurement for roads and motorways, GDDKiA enters into civil law contracts and therefore becomes a 'party of the relationship' under civil law. As opposed to the relationships under administrative law, such a relationship under civil law is characterized by the equality of all parties. Therefore, all parties to the civil law contract, whether public or private entities, government bodies or citizens, have the same rights under civil law.

The rule of equality of the parties under civil law is closely related to the rule of autonomy of will of the parties and the freedom of contracting. Freedom of contracting means, among other things, the right to decide whether to enter into a contract or not, the right to freely choose

the other party to the contract and the right to create, amend and terminate the contract. In practice, the rule of equality and the rule of freedom of contracting may be limited by other statutory acts, such as, for example, consumer protection acts or public procurement law.

Public procurement law is a *lex specialis* to the civil code. This basically means that where it is not otherwise specified in public procurement law, the provisions and rules of civil law should be applied. This principle is expressed clearly in Article 14 and Article 139 s.1 of the public procurement law, which states that: 'the contract tendered according to public procurement law is a contract under civil law regulations'. Therefore, the tendering procedures as described in the public procurement law are in fact specified procedures of concluding civil law contracts where one of the parties is a government authority or other public entity spending public funds.

As a result of applying public procurement law, the rule of freedom of contracting is in many ways limited. On the employer's side, the freedom of decision-making regarding whether to enter into the contract or not is limited by the budget constraints. According to Article 44 of the *Public Finances Act*, public expenses can be disbursed in the amount and for the purposes described in the *Budget Act* or in the appropriate financial plan of the department of finance. Moreover, public finances should be spent purposefully and economically, with a view to achieving best value for money through appropriate and optimal means and methods. Therefore the employer will tender the contract only when there are sufficient funds to perform it according to public finance procedures.

The employer's freedom to choose the other party to the contract is limited by public procurement law. Thus the employer has no choice but to conclude a contract with a contractor who fulfils all conditions and wins the tender. A certain risk to the employer emerges because the winning bidder, even though they fulfil all tender conditions may turn out to be unreliable or have a bad reputation. This is sometimes impossible to verify in the procurement proceedings and may cause serious difficulties later on. On the other hand, the bidder's/contractor's freedom of contracting is, in practice, limited to the freedom to decide whether or not to participate in the particular public tender and what bid to submit. Otherwise they are wholly dependent on the procurement proceedings and the result of the tender. When the contractor's bid has been chosen, they cannot, in reality, withdraw from signing the contract.

The contractor's right to create and to negotiate the content of the contract is practically non-existent because the employer is obliged by public procurement law to introduce the essential terms and conditions of the contract in the Terms of Reference. In practice, employers very often attach a ready-made draft of the contract to the Terms of Reference and the contractor may only accept it and make an offer in the tender or step away. The contractor may only 'negotiate' by asking questions under the Terms of Reference. However, it is solely at the employer's discretion whether to accept the contractor's suggestions.

After the contract has been tendered, both parties are again limited by public procurement law in their freedom to change and amend the contract as it is forbidden to introduce any significant changes unless those changes were anticipated in the Terms of Reference. This limitation is justified as 'protecting the equality of the bidders' – the rationale being that significant changes to the contracts might influence the content of the bid of other bidders and the result of the procurement might be different (see below).

The *Public Procurement Act* contains provisions which modify the contractual rights of the party in favour of the public employer. It is justified by the need to protect the public employer who acts in the public's general interest; they are bearing more risk than usually taken by

private entrepreneurs and therefore require increased protection. Such a statutory provision strengthening the position of the public employer in the contract is, for example, the statutory unilateral right of the employer to terminate the contract if the circumstances have changed significantly or in such a way that performance of the contract is not in the public interest any more. Otherwise unknown to other civil law contracts, public procurement contracts can be made void by a third party to the contract, such as the President of the Public Procurement Office, in circumstances outlined in the *Public Procurement Act*.

Under the freedom of contracting, parties can freely decide the content and purpose of the contract as long as it is not contrary to the 'spirit' of the legal relationship, to the law (such as, for example, public procurement law, as described above) or to the principles of 'community life'. It seems acceptable under the rules of freedom of contracting to conclude a contract where the situation of the parties is not balanced and objectively much more advantageous to one over the other. The parties can enter into such a contract provided that they are fully aware of its consequences and neither of them has abused their dominant position before entering into such a contract. The principles of community life which should be abided by include equitable principles, commercial honesty, equal position of the parties of the contract and treating the other party of the contract with loyalty and trust.

The question arises whether GDDKiA as the public employer and the party to the contract abuses its dominant position granted by the public procurement provisions or whether it really adheres to the equitable principles of contracting described above.

The latest examples (2014) of provisions of public procurement contracts in the recent public procurement procedures contain, for example, an unrealistically short period of time to perform the contract. This shifts excessively large risk and imposes numerous potential penalties on the contractor, including indemnity for possible loss of EU funding by the employer. This often requires the contractor to price the obligations of the employer, without documents, specifications and information which the employer should have provided. Polish public procurement law (*Public Procurement Act* and related ordinances) has been organized in such way that the procuring body (employer) shall define precisely the 'public need' and seek the most economically advantageous way of satisfying that need. In practice, the scope has to be precisely specified and shall be deemed non-adjustable, i.e. the most economically advantageous means the lowest price. There are various explanations for this *modus operandi*, one of the most popular being past experiences with corruption. In fact, limiting the right to negotiate the terms of the contract in the procurement process eliminates any possibility of offering favourable conditions for the preselected bidder. Similarly, limiting the selection criteria to price (with liberal participation conditions) should lead to transparent competition. However, such an approach usually facilitates the imposition of restrictive terms and conditions that cannot be influenced by the contractor. This 'take it or leave it' approach offers only limited possibility to appeal the content under the Terms of Reference to the *Krajowa Izba Odwoławcza* (National Chamber of Appeals) (KIO). The KIO typically performs the role of a criminal court but also deals exclusively with *Public Procurement Act* violations (Art. 179). *The Civil Code* embraces the principle of freedom of contracts, i.e. employers are free to create the Terms of Reference, including modifications to FIDIC forms. The only limitation would be a lack of bidders willing to participate in a tender. It is very difficult to prove that certain provisions of a contract breach the provisions of the *Public Procurement Act*. The bias in risks themselves is not illegal. It only becomes illegal if the risks are described in such way that they hinder the preparation of an offer. Even then

the burden of proof is with the party that files the appeal (Article 29 and others). Typical modifications of FIDIC forms are then legal from the point of view of the KIO. There is no other court or body that would take into account the long-term effect of one-sided modifications and limit that practice. After EU accession the control over the rules of the public procurement system were transferred entirely to Poland as a Member State. Due to unlimited employer powers of introducing specific conditions, FIDIC contracts (since 2004) started to gradually lose their original sense and balance. Nowadays, in such circumstances, contractors may often only choose between accepting these highly disadvantageous conditions or withdrawing from the market completely.

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Market environment prior to and after 2008 by Michał Skorupski (Poland)

The tendency to strengthen the bargaining position of the employer resulted from the situation as it existed in the 2004 – 2007. After joining the EU, Poland was promised significant subsidies for the development of its infrastructure and some argued that the supply side was not prepared to cope with the tasks in hand. The pre-accession projects were about to be completed and new financing perspectives negotiated. The years 2004 – 2007 in general were prosperous for the construction industry in Poland. In 2006 and at the beginning of 2007, a strong increase in construction prices was observed, with the majority of public tenders opening ahead of schedule. The procurement law in those years offered a three-step appeal system, which was used by the contractors to block the commencement of some construction projects. In a well-known example, the tender procedure for the A4 construction contracts in the section Zgorzelec-Krzyżowa (western border) had to be cancelled and re-announced three times. The participation conditions were strict, and well established companies were promoting themselves. This in turn resulted in quite a strong negotiating position of contractors who relied on balanced contract samples inherited from pre-accession programmes without major adjustments in particular conditions. Moreover many of the infrastructure projects foresaw a dispute procedure in arbitration courts independent of the state, where arbitrators were often civil engineering professionals. Furthermore, Polish legislation in the area of construction law (the *Building Code*) and environmental law did not offer easy-to-follow solutions for timely initiation of projects.

In such conditions the government seemed to be seriously worried about the possibility of losing the subsidies negotiated from the EU for the years 2007 – 2013. The authorities started to work on new conditions for managing the projects in several different aspects. For example:

- New legislation in environmental law, building codes and public procurement law was introduced. While the construction and environmental obstacles in theory were minimized, the procurement law changes were clearly introduced to erode the contractors' power in the

tender process; for example, instead of a three-stage appeal process now there is only one step available. The application fee to the court was also raised significantly making it almost prohibitively expensive to seek review. To speed up the project as a whole, authorities started to experiment with new procurement models, like design-build which previously had been rarely used in Poland.

- The qualification criteria were drastically reduced; moreover the government made specific efforts to invite companies from abroad to Poland (including Chinese companies).
- The contract forms were gradually amended to shift the powers on site to the employer. In this context it has to be recalled that, contrary to the practices under the Phare, Tacis and ISPA programmes, the EU and EIB financiers no longer scrutinized ex-ante to ensure that the FIDIC standard forms, (generally the Red and Yellow Books), were used in a proper way.

The above measures were adopted not only in the construction contracts, but also to service contracts (engineering and design services).

The government concentrated on absorbing as much EU funding as possible, with little attention paid to the market position or economic signals. In the meantime the construction operators started to suffer from the collapse of the private construction market; offices, housing and retail investments came to a grinding halt in 2008 with little finance available.

Since late 2008 more and more entities have participated in the public infrastructure market, with significant downward pressure put on prices and ambitious portfolios of projects executed by the government.

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17.5.1 Abnormally low price

A large part of the problems encountered in Poland originate from low contractor bid prices. In Poland, the only criterion taken into account in bid evaluation by employers is the lowest price. When planning expenditures to be financed by EU grants, the GDDKiA removed barriers of entry to the market by lowering the requirements for tender applicants. As a result, the number of contractors to whom contracts were awarded grew significantly. Contracts were even available to contractors from China and India. These contractors offered unrealistically low bid prices through price dumping. Faced with such a situation, established, Western companies had to propose exceptionally low prices to stay competitive. The employer rarely rejects a tender if it contains an abnormally low price but is authorized to do so under the *Public Procurement Act* (Article 81, Section 1, item 4). Moreover, the notion of 'abnormally low price' has not been precisely determined and the burden of proof requirement still remains a hurdle in the Polish legal system. For example, if a competitor A offers a very low price and competitor B wishes to appeal against

the selection of the tender A, then competitor B has to prove that price A is abnormally low. In other words competitor B has to prove that competitor A will not be able to perform the contract for price A without a loss. In practice, this is difficult without full access to competitor A's books and records. In fact, the track record of KIO demonstrates that it is virtually impossible to convince judges of the fact that a competitor has offered an abnormally low price.

The price offered by the Chinese consortium COVEC (which built the A2 motorway) was 71% lower than the price anticipated by the employer. Despite this, the price was not considered to be exceptionally low by the proper authority (in this case the KIO) when applying Polish public procurement law. COVEC won the tender and, subsequently, abandoned the building site in 2011 and left huge debts to their subcontractors. The re-awarded contracts were 53% and 65% more expensive than the COVEC price, as well as 17% and 24% more expensive than the second-ranking company that had originally lost to COVEC.

Contractors are forced to offer prices which are only marginally profitable. In such circumstances, any unforeseen problems in the contract or increase in material prices causes additional costs and put the contractor in peril of losing financial liquidity or falling into bankruptcy. This has already happened to a number of Polish and foreign construction companies participating in Polish construction projects.

Facing insolvency, the general contractors were relentlessly pressing their losses down by not paying their subcontractors, suppliers and service providers. This not only affects direct project participants but also small and medium-sized enterprises who are part of the overall supply chain.

Moreover, Polish construction contracts hardly ever provide for any adjustment or indexation of the Contract Price. As a result, the Contract Prices of large infrastructural projects (where time for completion extends over several years), are frozen and all risks of inflation or changes in the market burden the contractor. In the period 2010–2012, construction material prices in Poland increased significantly due to projects related to the European football championship. At the same time, the Contract Price could not be amended as in the vast majority of contracts Sub-Clause 13.8 had been deleted.

17.5.2 Inefficient risk allocation

Against the constant and express advice of FIDIC itself, the FIDIC books continue to be significantly deformed by the public employers in Poland via the particular conditions. As a starting-point it has to be kept in mind that in the FIDIC CONS/1999 Red Book, there are only three clauses where particular conditions are necessary, i.e. Sub-Clause 1.1.3.6 – tests after completion, Sub-Clause 1.6 – form of contract agreement, and Sub-Clause 18.2 – details of employer's insurances. In the FIDIC P&DB/1999 Yellow Book, there are only two clauses where particular conditions are necessary, i.e. Sub-Clause 1.6 – form of contract agreement and Sub-Clause 18.2 – details of employer's insurances. In other words: all other clauses include a default provision in the general conditions.

In Poland, the contractual practice has been reversed. As an example of a typical shift in risk allocation, take a 500 million euro design-build project of a railway station and subway construction co-financed by the EU (started in 2010). The

following contractor's rights to file claims (FIDIC P&DB/1999 Yellow Book) were deleted via the 120 pages of Particular Conditions. In Sub-Clauses 1.9 (Errors in the Employer's Requirements), 10.3 (Interference with Tests on Completion), 11.8 (Contractor to Search), 12.2 (Delayed Tests), 12.4 (Failure to Pass Tests after Completion), 17.4 (Consequences of Employer's Risks) and 19.4 (Consequences of *Force Majeure*), both extension of time and additional payment claims were removed. Such intervention in an underground contract must of course cause negative consequences in project management and contract administration.

Furthermore, in Sub-Clauses 2.1 (Right of Access to the Site), 4.7 (Setting Out), 4.12 (Unforeseeable Physical Conditions), 4.24 (Fossils), 7.4 (Testing), 8.9 (Consequences of Suspension), 10.2 (Taking Over of Parts of the Works), 12.2 (Delayed Tests), 12.4 (Failure to Pass Tests after Completion) and 16.1 (Contractor's Entitlement to Suspend Work) the additional payment claims were deleted.

The Sub-Clause 8.4 EOT claims at (c) Exceptionally adverse climatic conditions and at (d) Unforeseeable shortages in the availability of personnel or Goods caused by epidemic or governmental actions were removed by employers as were Sub-Clauses 13.7 (Adjustments for Changes in Legislation) and 13.8 (Adjustments for Changes in Cost). This caused procurement processes to come to a grinding halt with thousands of questions from bidders and other participants about the changed conditions delaying projects for months.

These are only a few examples of the change in risk allocation. In reality, the contract has nothing in common with the original FIDIC forms. Such interventions confuse the contract and the parties must then rely on insufficient Polish governing law and unsettled precedents of Polish courts.

In another contract, a 200 million euro design-build project (started in 2013) of inner city transport infrastructure re-construction projects (co-financed by the EU), the FIDIC P&DB/1999 Yellow Book is deformed via 70 pages of Particular Conditions. Typical modifications are, for example, that Sub-Clause 8.7 contains dozens of contractual penalties (including milestones penalties) for the contractor but there are no penalties for the employer. The contractor also has the duty to submit daily progress reports (stipulated in the modified Sub-Clause 4.21) or face contractual penalty. High daily contractual penalties are established for the late submission of design, time schedule (Sub-Clause 8.3, Programme), quality assurance system (Sub-Clause 4.9), and so on. The engineer can comment on those documents and ask for modifications to be made. If these modifications are not incorporated by the contractor in seven days, the engineer/employer can file for a penalty. Those provisions are commonly abused by the employer and the engineer to gain a better bargaining position during realization and to impose penalties.

A typical example is a situation where the engineer has, for example, 14 days to approve the contractor's design or time programme and waits until the last day of this period, causing critical delay. This in turn allows the employer to impose contractual penalties/delay damages.

Sub-Clauses such as 4.9, 4.21 and 8.3 are extended via particular conditions in an extreme way. For example, there are such onerous requirements in the content of the programme, progress report and quality assurance plan that it is difficult to fulfil them. Short terms for submission of these documents (with contractual penalties for delay) are stipulated in the contract. These are almost impossible to submit on time

because the contractor is not fully mobilized at this stage. Moreover, it is common practice that these documents are rejected many times without reason. Once again, this is an abuse of power and position by the engineer (employer) to gain greater control, strengthen their bargaining position and seek contractual penalties.

Sub-Clause 8.3 contains, for example, a provision that the engineer will not accept the programme or its updates in which the time for completion will be extended based on pending or rejected claims by the engineer or the employer in accordance with Sub-Clause 20.1. In reality, all contractor claims are pending or rejected.

Furthermore, the contract contains a modification of Sub-Clause 10.2. The contractor must submit 'complete documents' to have the taking-over right to work. If the work is not taken over in the stated time, contractual penalties are triggered. Another typical example of conduct done 'in bad faith' is where the employer creates artificial reasons to refuse taking over the works to impose contractual penalties/delay damages. This is done, for example, by demanding further documents stating that the submitted documents are not 'complete'. In this way contractual penalties increase – and the employer's bargaining position with them. Contractor claims and contractual penalties are usually off-set against the contractor's last invoice – often resulting in a loss on the project for the contractor.

Furthermore, the employer can terminate the contract for numerous reasons (named in the modified Sub-Clause 15.2 or for other reasons 'caused' by the contractor). The contractor will pay a 15% contractual penalty, if the employer terminates the contract. The reasons for contractor termination are narrowed to late payments by the employer and there is no contractual penalty.

17.5.3 Consortiums

Problems also arise in connection with public procurement law where the contractor forms a consortium. Joint and several liability of such a 'plural' contractor is mentioned both in the *Public Procurement Act* (Art. 141) and in the contract (1.14 c). As a result of this, it is in fact impossible to withdraw from a consortium contract. If withdrawal does take place, the remaining member of the consortium will always be liable to the employer for financing and realization of the contract. There are also no coherent regulations concerning the issue of a consortium partner falling into bankruptcy. In such circumstances, the remaining consortium partners bear responsibility for the insolvent partner's debt. All subcontractors of the bankrupt contractor as well as the employer will claim all outstanding payments from the solvent partners, instead of lodging a claim against the bankrupt estate. This combination of regulations effectively defeats (to some extent) the purpose of the insolvency proceedings as the other, remaining party is made responsible (to a large extent) for the insolvent party's debts. Consequently, one party's insolvency may very quickly lead to another party facing financial difficulties. Negative consequences for the particular construction project as a whole may also follow.

17.5.4 Contract administration: The Engineer

The position of the contract administrator is of key importance. A contract administrator (the engineer) hired by the employer on a professional service

agreement basis coordinates, monitors, supervises the compliance with standards, certifies the works done, tests, taking over, participates in variation, price and time management, claim evaluation, contract interpretation and dispute avoidance. They should help to perform a successful project in a fair way and in accordance with the contract achieving the demanded standard by the agreed time and for agreed price. According to FIDIC forms (both the CONS/1999 Red Book and P&DB/1999 Yellow Book), the engineer's role is to mediate solutions for numerous problems and disputes occurring between the employer and the contractor. The engineer is part of the employer's personnel but still acts as a third party and neutral mediator who settles disputes between the employer and the contractor quickly and effectively. In the original FIDIC forms, the role of the engineer had been as arbiter who had to provide determinations based on all relevant circumstances, after duly consulting the given problem with both parties (Sub-Clause 3.5 of the FIDIC forms). In Polish practice, the role of the engineer has been limited to the employer's representative who is wholly dependent on the employer's instructions. Such limitation of the engineer's role infringes upon the contractual equilibrium and leads to the paradox of the Polish construction contract where the court becomes the third party to the contract. If every dispute between the employer and the contractor must be solved by a court, effective and timely realization of the project becomes almost impossible.

The main reason why such a situation occurs is that there is no compatibility between the engineer's contract and the main contract. There is a conflict issue between those two contracts and the question arises: which contract should the engineer abide by in the first place? The engineer's contract provides an exhaustive catalogue of their duties – all of which are secured by rigid contractual penalties. Thanks to these, the engineer is effectively controlled by the employer. Also, according to the engineer's contract, one of the main goals of the engineer is to make sure that the contract does not exceed the employer's budget. Such a goal is often difficult to reconcile with the goal of performing the works in an 'efficient, timely, proper and safe manner'. According to Sub-Clause 3.1 'the employer undertakes not to impose further constraints on the engineer's authority, except as agreed with the contractor'. At the same time, the engineer's contract states that 'the engineer shall abide by the instructions given by the employer's project coordinator'. There seems to be an obvious contradiction between these requirements and it is impossible for the engineer to fulfil the requirements of both contracts.

Contractors now are demanding that the engineers (companies performing this role as well as individuals) perform their duties under the contract with due diligence, i.e. to take due regard of all relevant circumstances, including those circumstances which are advantageous to the contractor. It is quite typical in retrospect to prepare claims based purely on the inadequate performance of the engineer.

Negligence of the engineer is the contractual responsibility of the employer (Article 474 of the *Polish Civil Code*). However, the engineer may be personally liable for their actions if they exceed their proxy (Articles 103 and 104 of the *Polish Civil Code*). In all cases the engineer can even be held responsible for the contractor's loss occurring as result of unlawful conduct of the contractor (Aricles. 361, 415 and 430 of the *Polish Civil Code*). This serves as a timely reminder of the engineer's duties and potential individual responsibility.

During any construction process unexpected problems can arise. For example, unforeseeable ground conditions on site. Such problems require a prompt decision and clear instructions from the engineer (employer). However, the decision-making process of the Polish Public Employer tends to be rather ineffective and extremely prolonged. For example, when notified by the contractor about the discovery of a minor fossil (Sub-Clause 4.24), it took the employer a couple of months to make a decision on the issue. When notified by the contractor about the discrepancy between the documentation provided by the employer and the geological condition on the site (Sub-Clauses 4.1; 13.1), it took the employer over a year and a half to first acknowledge the problem and then give the contractor the required instructions as to the new technology of works. This obviously delays the works and makes it extremely difficult for the contractor to schedule properly.

Claims considerations by Aleksandra Marzec (Poland)

In 2004, employers began to abandon the idea of using dispute adjudication boards or arbitration tribunals. In fact, in the majority of transportation projects the dispute is now limited only to the determination of the engineer (who is subject to employer pressure) and the courts. The movement away from ADR was meant to limit the influx of claims. The result has been the opposite – more and more cases are not solved on site but left to a future court outcome. The response of contractors was to strengthen their claims policy in order to gain a better bargaining position in court.

This is a great example of a broken will to resolve naturally encountered problems on site with common sense. Despite the culturally negative meaning of the word 'claim', more and more claims are created and courts are flooded with cases that otherwise would have been resolved on site in due time.

The general claims consideration process concerning Polish large road or motorway construction investments is protracted and ineffective. A very short time to notify and quantify claims is often given (shorter than in original FIDIC form, for example, 14 days instead of 28 days for the notice according to the Sub-Clause 20.1). After the initial hurry, claims are considered and 'sat on' for an excessively long period. Most of the claims are classified as interim and, as a result, the contractor does not receive any payment for the costs incurred until the final claim is considered. There is also no transparency in the justification of the engineer's and employer's decisions concerning claims.

It is also very often the case that the employer repeatedly extends the time for completion by short periods, even though the claims justify longer extensions and both parties know that it will be impossible to complete the project within the extended time. As a result, contractors are sometimes working on construction sites for several months without a granted extension of time. The 'time at large' approach is not perceived in Poland in the same way as in common law countries and it is usual for participants of construction projects to assume the project as 'officially' extended only in cases where a signed annex is attached to the contract. The contractor's situation becomes uncertain and, further, it makes it extremely difficult to prepare a reasonable and efficient schedule of the works complying with the contractual conditions. At the same time, the contractor is still required to deliver bank performance guarantees and insurance. These requirements are, in fact, almost impossible to satisfy because banks and insurers are often unwilling to issue such guarantees on the basis of an annex. It is an abnormal 'vicious circle' type situation in which the contractor is in deadlock.

The ineffectiveness of the claim consideration process can be illustrated with the following example. A design was prepared without soil investigations and discrepancies between the design and actual conditions arose on site. Regardless of the fact that such discrepancies were the result of mistakes made during the design of works or changes in the environment, the problem needed immediate decisions to be made and reasonable technical solutions to be found in order to prevent suspensions or delays of works. In subsequent geological surveys and expert opinions, the errors of the design were revealed. However, for a considerable period of time, (over a year) the employer ignored the problem and only instructed the contractor to proceed according to the tender design and other documentation. This was despite an independent opinion given to the contractor which was also approved by the engineer. When the engineer gave instruction of variation on the basis of this expert opinion, the employer demanded the engineer replace their staff and he was held personally responsible for these decisions. When the problem could no longer be ignored and the instructions of variation were eventually approved by the employer, the cost of a technical solution was several times higher than it should have been if the appropriate remedy had been applied immediately after discovering the problem. It was further necessary to extend the time for completion by over 300 days.

According to data obtained in February 2013, of 4200 claims filed by contractors, 2000 have been rejected, 2000 were being still examined and only 75 have been accepted. A further 53 claims were withdrawn by contractors. These numbers clearly illustrate the problem. It seems that the employer introduced a policy of not accepting claims in general based on a short-term (and often short-sighted) approach in an attempt:(1) to save public money; and (2) to strictly adhere to contract conditions under public procurement law.

Any deductions from the payments due to the contractor (such as contractual penalties imposed by the employer) can prevent the contractor from continuing with the works. For example, the employer may make an arbitrary decision to withdraw a bank performance guarantee or impose contractual penalties by deducting them from payment. The contractor may then file a lawsuit in court but this is expensive and time-consuming. In the meantime, it is the contractor who bears the significant and additional financial burden of litigation.

An example is the recent case (I CSK 748/12) where the Polish Supreme Court (the last instance court in Poland) confirmed that contractual penalties imposed on the contractor after a delay caused by GDDKiA are not acceptable as they are in conflict with the principle that a debtor cannot be in delay if the creditor is in delay. What is worth mentioning is that the respective project commenced in 2002.

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17.5.5 Specific legislation for subcontractors

In recent years, it has been the tendency of the Polish legislator to better protect the interests of the subcontractors. This move was in response to the large number of bad debts and bankruptcies among small and medium-sized entrepreneurs involved in

the construction business. As a first step, Article 647 was added to the *Polish Civil Code* in 2003. Article 647 stipulates that the employer and contractor are jointly and severally liable for the payment to the subcontractor and subsequent subcontractor. An employer is responsible for the payment to subcontractors and further subcontractors only if certain conditions are fulfilled (that is, if they accept the basic terms and conditions of the subcontractor's contract in the prescribed period of time). However, if an employer was informed about the subcontractor's contract in writing but did not respond to it within 14 days, then according to the *Polish Civil Code,* they gave their implicit acceptance. Obviously, if an employer makes a payment directly to the subcontractor based on this provision, they will have a retrospective claim against the contractor (and such claim will usually be off-set by the contractor's payment). The same rules apply also to the contractor who is responsible for payment to further subcontractors. The rule of implied acceptance described above may lead to a risk of double payment for the same works. If the contractor (or employer) is unaware that they gave implicit acceptance for certain, further subcontractors or that they have not been paid properly, the employer may be forced to pay them for the work that has already been paid for to the subcontractor. If they pursue a retrospective claim against the subcontractor who was obliged to pay in the first place, this may not always be effective, for example, if the subcontractor became insolvent. These provisions are incorporated into all Polish FIDIC-based contracts in Sub-Clause 4.4.

A new, 'special purpose Act' named '*The Repayment of Some Unpaid Due Amount of the Entrepreneurs, which Resulted from the Realization of the Public Procurement Act*' (Dz.U. z 2012 r. poz. 891) came into effect in 2012 ('the Act'). This Act stipulates that any micro, small or medium entrepreneur who performs some works, provides supplies or services connected with the public procurement granted by the GDDKiA, and who cannot avail themselves of Article 647 of the *Polish Civil Code* can be paid directly by the GDDKiA from the special national roads fund. The GDDKiA has a claim against the contractor to return the amount paid on the basis of this Act. The procedure of confirming such amounts due is not transparent and it causes many practical problems. Moreover, the Act applies only to the public procurements granted or initiated before the enactment of the Act. Therefore, it is in fact only a temporary and short-term solution. Its retroactive application is also questionable from a legal point of view. While small subcontractors' and suppliers' interests are secured and their situation has improved, the question of whether the main contractor's rights and interests have been significantly infringed remains.

17.5.6 Courts and litigation

Arbitration clauses and Dispute Adjudication Boards have been progressively removed from most of the Polish roads contracts based on FIDIC. Public employers (such as GDDKiA) have been instructed to do so by the General Attorney of the Treasury – the body which represents government departments in the courts. Sub-Clauses 20.2 – 20.8 are often replaced with only one sentence: 'All disputes will be settled by the common court of the Employer's jurisdiction.' As a result, all disputes resulting from large road and motorway projects are dealt with by the District

Court in Warsaw because it is the only court with the jurisdiction to do so. Court proceedings are lengthy and tend to distance themselves from facilitating current realization of the contract. A first instance decision can be appealed a further two times up the court hierarchy in Poland. This means that litigation usually comes to an end after the project is completed and contractual responsibilities discharged. Therefore, court proceedings do not really influence the actual realization of the project.

Recently in Poland there has not been a single motorway, highway or bypass construction project that has not experienced claims being notified during the execution of related works. These claims turn into litigation in the majority of cases. Current trends reveal that in 2010 the Polish courts handled 10 construction cases, in 2011 around 40 and in 2012 almost 100.

All the cases against GDDKiA reach the afore-mentioned District Court of Warsaw. This court, until recently, had dealt with some 1500 cases a year, mainly in the field of family law, protection of personal property and accident indemnities.

To reduce this tendency, the *Public Procurement Act* was amended so that contractors are now automatically disqualified from participating in Polish tenders for three years if a Polish court confirms a penalty of 5% or more of the contract amount (Amendment of 12 October 2012, which came into force on 20 February 2013 ((Dz.U. z 2012 r. poz. 1271)).

The use of alternative dispute resolution procedures in Poland is very limited. The benchmark is, of course, FIDIC's Dispute Adjudication Board (DAB) comprising of suitably qualified adjudicators. If such an adjudication procedure were followed, it could prevent the parties from breaching the contract and many disputes could be settled without a court, while the contract is still 'live' on site – provided of course that both parties respect the DAB's decision. However, the clauses stipulating DABs are usually removed from the contract. In fact only a few transportation projects have Sub-Clauses 20.3 and 20.4 remaining in force. The vast majority escalate disputes from the level of the engineer to the court directly.

According to data obtained on 19 September 2013, the value of court litigation involving GDDKiA and the contractors has reached approximately 6 billion PLN (US$2 billion), not including current claims worth 3.8–5 billion PLN. Therefore, total contractor claims amount to nearly 10–11 billion PLN (US$3.3–3.6 billion). The amount and value of claims indicate that there are some serious problems in the Polish approach to large infrastructure projects.

The number, extent and complexity of matters being filed in connection with construction of roads are so huge that litigation often spreads over several months and the expected time for resolution can be given in years (and this is only in the first instance). Moreover, it cannot be foreseen when the relevant litigation will be definitely concluded once all avenues of appeal are exhausted. This brings further uncertainty because of the lack of settled precedents.

The uncertainty of the decisions of the Polish courts can be demonstrated by the outcomes concerning conditions precedent for claiming. One opinion is that the *Polish Civil Code* at Article 118 determines the limitation period for construction claims to be three years from the event or circumstance, and the freedom of contracts cannot take priority over this statutory rule because of Article 119 of the *Polish Civil Code* that reads that 'limitation periods cannot be shortened or extended by legal action'. Time limits for claims under the Sub-Clause 20.1 can be seen as shortening

the limitation period. This opinion was confirmed in the judgment of the District Court in Warsaw on 13 July 2011 (file: XXV C-701/10) and also on 11June 2012 (file: XXV C-567/11), including the confirmation by the Court of Appeals (on the 20th March 2013 year; file No. VI ACa-1315/12), which ruled that the respective part of the Sub-Clause 20.1 is invalid under Polish law. The argument being that:

> there is no reason to assume that the scope of freedom of contract goes so far as to allow for free creation of contractual deadlines causing the extinction of claims related to property, in particular, where such claims are subject to statutory regulation on limitation.

On the other hand, there are several awards of the same court stating the opposite. For example in judgments on 6 June 2012 (file: XXV C-1215/10), on 7 March 2012 (file: XXV C-249/11) and on 30 April 2013 (file: XXV C-355/10). In the last case it was argued that:

> in accordance with the general principle of freedom of contract stated in the art. 353 [1] of the Civil Code it is possible to contractually agree a period of time after which the creditor's claim expires. This is not contrary to the art. 119 of the Civil Code. The effects and functions of time bars and periods of limitation are different.

Until some Supreme Court precedent is in place, the uncertainty created by such contradictory awards will remain. Therefore, it is highly recommended to strictly observe the notification periods provided in the contract.

Contractor defence measures by Michał Skorupski (Poland)

Needless to say, the legal and market environment is far from favourable to private operators in the public construction sector (i.e. contractors, service engineering companies, design companies). This then leads to the setting up of intensified defence mechanisms and counter-claims emerging in the industry.

The role of claim management has been elevated to an important part of any contract with a Polish public employer. The rule of limited trust and gathering evidence for any potential default or negligence on the employer's side generally prevails. A typical large contract begins with an assumption of bad faith and distrust of the other party. Meetings are recorded and letters analysed to discover hidden meaning.

The contractors are forced to:

- protect the performance guarantee. This is based on the concept of securing the contractor's claim in such way that the employer's right to draw on the guarantee is blocked in court; usually, if the contractor produces enough documents proving or indicating mistakes, bad faith or lack of co-operation of the employer, in conjunction with a long list of contractor's claims, the court could block the right to have recourse to the performance guarantee.
- demand payment guarantee from the public employer. The Civil Code Article 649.1 to 649.5 gives the right to demand such guarantee (even from the State Treasury). This guarantee can apply both to the prices of the contract works and to claims. If within 45 days a payment

guarantee is not provided, the contractor has the right to terminate the contract. If the State Treasury has difficulties in securing the payment security in a form requested by the Civil Code (in general, bank or insurance company guarantees), the contractor can terminate the project because of the employer's default.

In this aggressive environment, contractors have learnt to use and misuse their rights and opportunities. Put simply, it is a matter of survival for them.

The increase of aggressive methods on the contractors' side have 'stirred the hornet's nest' on the employers' side. Claim management departments, long-term advisory contracts, teams of lawyers dedicated to contract management are all commonplace in road or railway procurement projects. In the absence of any country-wide, commonly respected body for dialogue, it seems legal language and discussions through lawyers are here to stay for the foreseeable future.

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17.5.7 Consequences of inefficient risk allocation

In January 2014, FIDIC, EFCA and SIDIR (a member of FIDIC and EFCA – representing the interests of consulting engineering firms in Poland) published a joint common press release entitled '*Engineering Consultants Concerned with Public Procurement Practices in Poland*'.

According to this document, FIDIC is particularly concerned with the imposition of Particular Conditions in contracts which drastically shift the fair balance of risk and responsibility and distort the FIDIC approach to best practice. The result has been low efficiency of national construction investment programmes. This in turn has directly (or indirectly) led to massive litigation, bankruptcies and loss of jobs in the Polish construction sector. FIDIC, EFCA and SIDIR urged the Polish government and contracting authorities: (1) to award public contracts on the criterion of the most economically advantageous tender, as published in the new EU Procurement Directives; and (2) to re-introduce internationally accepted construction contracts, with any specific modifications to be agreed by all parties, but retaining the core features of balanced risk and responsibility.

At the beginning of 2014, another three large motorway and road projects were terminated in Poland simultaneously before completion. In two cases the consortium demanded from the GDDKiA the guarantee for payment of the residual amount of remuneration for each of the contracts. This was the contractor's statutory right under *The Civil Code*. The GDDKiA provided the consortium with a document which, in the contractor's opinion, did not fulfil the conditions of the bank guarantee and gave no real security to the contractor because it could be revoked at any time by GDDKiA. As a consequence, the consortium notified the

employer of termination of the contracts based on civil law provisions. In return, GDDKiA notified the consortium of termination of the same contracts based on breach of contract provisions the very next day.

Both parties claim that the other party's withdrawal was unfounded or unlawful and accordingly each party tried to penalize the other for terminating the contract. The consortium claims that GDDKiA had not provided the acceptable guarantee for payment and that GDDKiA's termination was late and therefore void. The GDDKiA in response claimed that the guarantee provided was sufficient and that the consortium was in delay and termination was justified.

In February 2014, the head of the GDDKiA was dismissed from office by the Prime Minister. This decision was a result of an overall evaluation of the work of the existing management. The official reasons were that the existing management team had been working together for six years and 'fresh blood' was needed to ensure transport infrastructure investments financed from the new EU budget for the years 2014 – 2020 would continue. The following were mentioned as 'serious problems' in Poland: delays in realization and poor relationships and cooperation with contractors and the greater construction industry. The new head will try to avoid repeating the 'dark days' between 2007 – 2013 which will go down in history as a period of bankruptcies of many construction companies.

Poland is often referred to as the 'largest construction site in Europe' but is an atypical beneficiary of European subsidies. Over the last seven years alone the length of motorways in Poland has tripled despite the financial crisis. However, any strong, viable companies that could export their services and expertise abroad have failed to develop in Poland despite the completion of a number of major road programmes. This is in contrast to Spain, for example, where strong construction companies were brought to life thanks to EU subsidies. As a result of this, Spanish companies now own a 40% market share of the contractor tenders for GDDKiA.

To improve the current situation in the long term, it is crucial to revert to the application of a fair and balanced standard form of contract. If Poland and other CEE countries cannot achieve this goal by themselves, then it is the responsibility of the international and European funders to insist on this issue as a prerequisite for disbursing the funds. It is hardy comprehensible that the World Bank, the EBRD and the EIB require developing countries to have contractual conditions that are fair and reasonable and provide a balanced allocation of risks and liabilities but refrain from requiring any contractual standards when spending European taxpayers' money in Europe.

One of the key questions is the position of the EU on these matters. In this context it is encouraging to note that the EU legislator adopted Regulation No 1316/2013 of the European Parliament and of the Council, establishing the *Connecting Europe Facility* which states in Recital 65:

> In order to ensure broad and fair competition for projects benefitting from CEF funds, the form of the contract should be consistent with the objectives and circumstances of the project. Contract conditions should be drafted in such a way as to fairly allocate the risks associated with the contract, in order to maximise cost-effectiveness and enable the contract to be performed with the optimum efficiency. This principle should apply irrespective of whether a national or international contract model is used.

Whereas before, the EU Commission could only act if the general principles of procurement were violated (such as transparency, fairness and non-discrimination), the CEF Regulation can now provide the European Commission with a specific powers to investigate alleged shortcomings, even though the principle has only been addressed in a Recital and not in an Article in a Regulation.

There still is an obvious regulation gap in EU law when compared with the leverage applied by the Multilateral Development Banks vis-à-vis their borrowers which prevents the EU Commission from becoming legally engaged in case of misuse of contractual conditions by a state authority. A remedy to this inefficiency would help to put the CEE EU Member States (particularly Poland), on a par with their Western European counterparts and would promote the further sound development and competitiveness of the European construction industry.

17.6 The Czech experience

In the Czech Republic, the development of managerial and legal aspects of large infrastructure projects was heavily influenced by the period of a centrally planned economy. The rules and principles used during the communist era would not have been appropriate in open market conditions. In fact, after the Velvet Revolution, there were two possible ways of moving forward. The first was to revert to the advanced, pre-World War II laws and traditions of the First Czechoslovak Republic or, second, to start a new tradition. The latter option was chosen. A new tradition meant that new standard contracts or some established foreign documents could be readily adopted. Thanks to the conditions for EU funding (ISPA, Phare) demanding the use of such time-proven forms of contract, FIDIC forms started to be used as a recognized standard in projects financed by the EU all over the CEE. Because of the lack of a traditional form of contract in the Czech Republic, FIDIC forms became a part of the public procurement system in the Czech Republicm, as they have in Poland, Romania, Slovakia and many other countries.

From the 1990s, the Czech Directory of Roads and Highways (DRH) has used the FIDIC CONS/1999 Red Book translated into Czech and, from 2002, in the form of a document called the *Commercial Conditions for Roads and Highways Construction* (*Obchodní podmínky staveb pozemních komunikací*). In the early years, participants of construction projects did not obey the rules stated in FIDIC forms and actually followed practices they were used to. Step by step, they started to understand and use the FIDIC contractual procedures.

General Contracting remains the project delivery method of choice used for almost all construction projects in transportation infrastructure public procurement. DRH is responsible for the design and provides detailed drawings, specifications and a bill of quantities for the tender documentation. Rates and prices priced in the contractor's bid at their risk are re-measured according to the actual need and paid on the basis of monthly statements of works done. Contract administration is done by the engineer.

Right up until the last tenders were received for the reconstruction of the D1 Highway in 2013, FIDIC forms were used without major adjustments per particular conditions, i.e. a balanced risk allocation and the overall meaning of the contract stayed preserved.

However, at the eleventh hour of the tender process, DRH released 100 pages of new conditions that changed the balanced risk allocation in the FIDIC forms. The main factors causing this were political pressure and lack of knowledge of DRH legal counsels. Numerous questions from bidders and other participants about the new conditions delayed the procurement process extensively. After this experience, DRH changed the particular conditions to become more balanced but this did not stop the claims that must have been noticed by the contractors because of confusing contractual conditions.

There are some key issues which still remain unresolved such as:

- The role of an independent engineer. There is a trend to remove all clauses dealing with the engineer from the FIDIC conditions and to provide contract administration only via the employer's representative with unlimited competencies and no responsibility.
- The detail with which the design should be prepared for tender by the employer. There is a new public procurement regulation in the Czech Republic (No. 230/2012, § 1(3)), demanding that a detailed design for implementation be provided by the employer for the tender.
- Price increase/decrease caused by re-measurement, claims and variations in respect to public procurement law. In fact, Czech public procurement law (in light of the current interpretation by public bodies such as the Czech Competition Office and DRH internal norms) does not enable the realization of large infrastructure projects, by prescribing rules that do not allow re-measurement, proper claims and variations management.
- Dispute resolution. The FIDIC dispute resolution system is removed and litigation is used. No special construction senates exist in the Czech Republic and a lack of expertise causes disputes to last for years and to be conducted in a manner contrary to common sense and best practice.

Local limits for development: An interview with Shy Jackson (UK) by Lukas Klee (the Czech Republic)

In the following discussion, the author interviews Shy Jackson – an experienced British construction lawyer. The questions examine the issue of how to recognize the local limits for construction law and management development in particular countries.

Q: Does the target price system and ECI approach comply with EU legislation?

A: It is important to remember that the UK is part of the EU and, therefore, any tenders have to comply with the same regulations. The UK has different legal systems for its parts and, for example, the law in Scotland is not the same as the law in England, but EU procurement law applies everywhere. In that regard, there is nothing in EU procurement law that prohibits the use of target costs contracts or early contractor involvement. These methods can still be used as long as there is a fair and transparent process.

In that respect, it is important to understand how the price is built up and this was the issue in the decision on framework agreements by the High Court of Northern Ireland in the Henry

Brothers case (*Henry Brothers (Magherafelt) Ltd v Department of Education for Northern Ireland* [2009] Vol. 1 B.L.R 118). In that case, the Department of Education (DOE) had launched a procurement process for the award of a multi-supplier framework agreement for major construction works for the Northern Ireland Schools Modernization Programme. The framework was to consist of a maximum of eight contractors and last for four years, with an estimated value of £550–£650 million. The DOE stated that appointment to the framework would be on the basis of the most economically advantageous tenders (MEAT).

The claimant contractor (Henry Brothers) was unsuccessful and sought details of how the DOE had evaluated tenders and reached its decision in appointing contractors to the framework. The court considered the question, whether it was legitimate to use fee percentages for the purpose of determining the MEAT at the primary competition stage to establish price after the completion of the secondary (mini) competition stage. The court looked at how the pricing was determined (and because discussions would occur after the completion of the competitive stages of the procurement process), it was held that the process did not comply with the requirements of the *Public Contract Regulations* (2006) and was not consistent with the requirement for transparency, equal treatment of tenderers and the development of effective competition.

The court did not conclude that it is always necessary to require tenderers to provide detailed costings at the primary competition stage nor did it rule out the possibility of fee percentages being used as a legitimate pricing mechanism. The court followed the earlier decision in *McLaughlin & Harvey Ltd v Department of Finance & Personnel* and set aside the framework agreement. Appeals against these two decisions were dismissed by the Court of Appeal in 2011 in *McLaughlin & Harvey v Department of Finance & Personnel* and *Henry Brothers (Magherafelt) & Ors v Department of Education for Northern Ireland*.

In conclusion, it is possible to use these methods, as is done in the UK, but they do raise various issues that need to be considered in order to ensure there is no breach of EU procurement rules. The EU is looking to modernize its procurement systems and on 30 May 2012, the Competitiveness Council held an orientation debate on the European Commission's proposals for modernization of EU public procurement policy. This followed with the European Parliament, in plenary session, adopting a resolution on modernization of public procurement on 25 October 2011 and the Green Paper published on 27 January 2011 by the European Commission to consult on the modernization of EU public procurement policy.

The new legislation, already agreed with Council in June 2013, overhauls the current EU public procurement rules and for the first time sets common EU standards on concession contracts to boost fair competition and ensure best value for money by introducing new award criteria that place more emphasis on environmental considerations, social aspects and innovation.

Thanks to the new criterion of the 'most economically advantageous tender' (MEAT) in the award procedure, public authorities will be able to put more emphasis on quality, environmental considerations, social aspects or innovation while still taking into account the price and life-cycle-costs of what is procured.

To fight social dumping and ensure that workers' rights are respected, the new laws will include rules on subcontracting and tougher provisions on 'abnormally low bids'.

Q: Do public employers in the UK use the DB delivery method?
With the DB delivery method, there is always a subjective point of view. The particular bidders submit different technical solutions in their proposals. In using DB, how does the employer evaluate the proposals (with the help of committees or independent experts)? Do participants who do not

win the tender question the proposals of other competitors through administrative procedures, and so on?

A: Public authorities do use DB forms of contract. It is a decision for each project as to whether that is a suitable form of contract. A road project may have less scope for different design proposals than the design of a train station.

By way of example, DB is the proposed form of contract for the Northern Line extension works and the recently completed East London Line project but is not used in the Crossrail project. It is common for the public authority to produce the initial designs which the contractor will then develop.

When using that form of contract, the public authority would normally appoint consultant engineers who will help to evaluate any proposals and will provide the approvals needed during the works. This also helps to ensure that there is a proper assessment of any proposals.

Although challenges to tender decisions are becoming more common, they are not usually on the basis of what design was used. Such a challenge will probably be quite difficult and less easy to decide than challenges based on pricing.

Q: Do public employers in the UK use the obligatory lowest bid price approach in public procurement? Does setting a target price work?

A: There is no obligatory lowest bid price approach in the UK. Indeed, choosing on the basis of the lowest price is sometimes seen as a risk since it makes it more likely that the cost and the risks have not been properly considered, leading to cost overruns at a later stage. Since a target cost is supposed to represent the price for the project, there is no problem in using it when assessing tenders.

Q: Is there free international competition in construction of large infrastructure projects in the UK? Is there a market protection?

A: The UK market is very open to international companies. This is helped by the use of English but it also represents a UK view that it is better for the market to be open to competition. There is no protection for local companies and international contractors such as Ferrovial, Strabag, Sisk, Vinci, Dragados, Hochtief and Alstom are involved with the Crossrail project. It is, however, worth noting that they usually, but not always, operate in joint ventures with local companies.

Q: Does the ECI and co-operation approach work with international contractors?

A: As noted, international contractors tend to act in joint ventures with UK contractors and that helps them to understand how procurement works in the UK. They do sometimes need to invest some time in understanding how the contracts are intended to operate but that is not seen as a hurdle.

Q: In the UK, there is obviously a long-term strategy in infrastructure construction. What is the key factor that has led to the development, respect and fulfilment of such a strategy? What are the key factors needed for the global construction industry to join forces and align interests as a whole?

A: What drove the development of a construction strategy in the UK was the recognition by government that construction is a large and important part of the economy and that infrastructure is crucial for economic growth. This, together with the need to cut costs in view of the economic situation, is driving the current effort to find better ways of managing construction. In addition, there are strong construction industry bodies in the UK that have always lobbied government and have been able to influence its thinking to some extent.

These reasons also apply outside the UK. Governments and bodies such as the World Bank and the EBRD are also recognizing that developing infrastructure is important to support the economy. These bodies also need to consider what is the best way to procure such works. But another key issue is the whole life cost and investing in structures and buildings that will last longer and would be easier to maintain. There is still a tendency to focus on the capital cost of a structure and not on the long-term maintenance cost. In addition, it is necessary to consider how to motivate the parties that take part in construction projects, so that there is less of a reason to invest in disputes and more of a reason to ensure projects are successful.

Q: Who exactly created the NEC Contract (people from public or private sector)? Is it created by all construction project participants (contractors, employers, consulting engineers and so on)? Is it an industry compromise (in risk allocation, in claim setting, in taking over procedure, in contract administration)?

A: The NEC was created by the Institution of Civil Engineers (ICE) following an internal recommendation to review alternative contract strategies with the aim of identifying the needs for good practice. It took a very different approach from the ICE conditions of contract - the standard form then published by the ICE. The first edition was published in 1993, with a second edition in 1995, and a third edition in 2005. A revised third edition was published in April 2013. The ICE stopped publishing the ICE conditions of contract in 2011 and will only be publishing the NEC form of contract.

In contrast, the Joint Contracts Tribunal (JCT) is a standard form of contract used in the UK which does try to represent all parts of the industry. The JCT form of contract, however, is traditionally used for building works and not for civil engineering works. The NEC does not present itself as representing all parties but it puts forward what it believes are good principles for project management which are based on collaboration.

Q: Are there specialized employees working for state authorities that are able to cooperate with the contractor, to make quick decisions and to be active? Are the public clients in the UK 'intelligent'?

A: Some large public bodies, such as the Highways Agency, Transport for London and Network Rail are very experienced and are happy to have dialogues with the industry to find out what is the best way to manage a project. Such bodies employ people from the construction industry who understand the issues and who are better at managing such projects.

However, when smaller bodies such as local authorities or hospitals manage construction projects, they do not always have the people with the right skills and experience. That sometimes gives rise to difficulties.

Q: Do public employers in the UK hire traditional independent consulting engineers, i.e. does government hire the private sector to administer public contracts? Is there free international competition for engineers?

A: Contracts under English law usually require a party which is appointed to act independently and neutrally as the certifier – the person who, for example, decides what is the correct payment. That can be done by the employer but often an external consultant will be appointed for that role. It is usual for international consultancies to bid for such a role.

A good example is the case of *Costain Ltd v Bechtel Ltd*, which concerned the role of the contract administrator on one of the Channel Tunnel contracts. It was held by the court that

there was a duty on the contract administrator to act impartially in matters of assessment and certification.

Q: Has BIM been implemented in the UK legal system as a norm?

A: BIM is not yet implemented as a matter of norm, but it is becoming more common and is now also being seen in private projects. It is important to recognize that BIM is a very wide term that covers many things. There are different levels of BIM that can be used and it depends on how much an employer is willing to commit to. The level of encouragement to use BIM is clear from the publication of the protocol by the Construction Industry Council (http://staging.cic.org.uk/publications/) for the use of BIM, which provides a best practice guide and an outline scope of services for the role of information management and the British Standards Institution publishing an updated technical standard, PAS1192:2, which covers collaborative production of construction information.

Q: I mentioned there is a new public procurement regulation in the Czech Republic (No. 230/2012 - § 1(3)), demanding that a detailed design for implementation be provided by the employer for the tender. Do you think it is practicable and efficient?

A: The principle of having a complete design as part of the tender is a good one. It helps to give certainty on what is being built and allows more accurate pricing. It is, however, important to (1) ensure that the design is as accurate as possible e.g. by doing full ground investigation tests and (2) agree on who bears the risk in the event that the design has to change.

It is common in the UK for the employer to provide a full design or a preliminary design, which the contractor develops under a DB contract. The contracts will make it clear what happens if the design needs to change and that will usually depend on the reasons. For example, who bears the risk of ground conditions or changes in legislation.

Q: All over the CEE, there is one common problem – the FIDIC Red Book is a re-measurement contract that includes claims, variations and value engineering. But in the Czech Republic, EU procurement law that was implemented defines limited possibilities for additional works with a price limit of 50% (it was changed to 20 % in the Czech Republic). Some people interpret public procurement law in relation to FIDIC in following way:

1. *What is re-measured beyond bid price evaluations is considered as additional work.*
2. *What is subject to variation is considered as additional work (furthermore, you can only add new works but you cannot deduct what was not done when there is replacement of items in the Bill of Quantities).*
3. *Value engineering clauses are deleted and they cannot be used.*

Many projects encounter a higher number of additional works (i.e. more than 20%) before all the works are completed and the participants fear to proceed with other variations even if they are necessary or inevitable. Project management lacks functional variation procedures and the project is often paralysed.

Furthermore, re-measurement, variations and claims must be subject to the negotiated procedure without publication according to the Public Procurement Act. It is hard to imagine having to process a number of these procedures for every variation and change in tender estimates on a daily basis. Do you think it is practicable and efficient?

A: A re-measurement contract is a way to agree on payment where the actual quantities of works are not known. It is a good way because the employer is only paying for actual work done at

agreed rates instead of paying a risk element in a lump-sum price contract. If the actual cost exceeds the tender estimate, that is not additional work but it suggests that the original estimate was not very good. This makes it clear why getting the right estimate is very important in order to avoid a higher cost than originally anticipated.

Establishing a price-cap seems arbitrary and something which ignores the nature of the re-measurement contracts. If the authority wants certainty then it should use a lump sum contract with a fixed price. A cap on genuine additional works could be good because it makes it clear that the employer cannot issue too many variations and it is such employer variations that often lead to more cost and delay.

I do not think that where there are additional works or variations that they need to go to public tender again (unless they are a very substantial change to the works). Additional works or variations are not a real change to the contract because the contract allows for that.

Q: Do you have some particular recommendations for the participants of infrastructure construction projects?

A: In my experience I find that it helps to be very clear on what the basis for the project is and what the employer is seeking to achieve. The parties should have open discussions about what they are trying to achieve and what are the issues and risks that can affect the project. The parties must then understand what the contract requires from them and ensure that they are in a position to deliver.

Many problems come out of people not reading or not understanding what the contract requires and it is always a good investment for the site team to spend some time in understanding what the contract requires in terms of management of the works. This helps to avoid legal issues such as whether a notice was served on time and who is responsible for certain risks. If there is a problem, it is best to deal with it openly and find a way to resolve it, rather than keep quiet and wait until the end of the project.

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18 Building Construction: Health Care Facilities

18.1 Health care facility construction project

Health care facility construction projects are one of the most demanding of all construction projects. Every such facility consists of areas and a variety of functional units where a spectrum of services is provided. For example, a health care facility may accommodate: hospitalized patients, specialized outpatient surgeries, diagnostic facilities (laboratories, X-ray examination rooms) and other spaces that support catering, accommodation and cleaning.

This diversity is naturally reflected in the broad range of legislative regulations and standards that must be borne in mind whenever a health care facility is constructed or run. Each of the extensive and ever developing functions of such a facility – including the extremely complicated equipment and telecommunications – requires dedicated knowledge and experience. No one individual can have such comprehensive knowledge which is why a large number of specialists are involved in the construction of such a health care facility. Particular functional units within the facility may also have competing needs and priorities that can only be realized subject to compliance with rigorous mandatory requirements, actual functional needs (such as those regarding operational linkage and inter-departmental relationships), financial limitations on the employer's side, and so on.

18.2 Pre-design planning phase

The phase of planning prior to commencement of design preparation is frequently required at the preliminary stage but is often neglected. This is an intermediate stage between strategic decision-making and designing and is an ideal platform for managers and other staff involved in such a health care facility to express their visions, influence design (such as floor space), locations and financing of the project. This

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phase can also have an impact on the cost and efficiency of the facility as a whole for many decades of its expected useful life. The people involved in the pre-design planning phase must sometimes make difficult and unpopular decisions. These may include stoppages of planning and postponement of the commencement date so that the priorities and other factors can be reassessed in the meantime. The following, for example, will have to be taken into account in this phase:

- Inpatient to outpatient ratio related trends. Despite pressure to restrict the length of hospitalisation, expenses and new equipment and services that facilitate broader outpatient care are ever growing. This is due to an ageing population and better diagnostic techniques and equipment which result in more hospitalized patients.
- Use of intensive care. In the US, for example, there is a 'safety net' for 45 million uninsured patients for whom health care is not available elsewhere.
- Personnel shortages. Outflow of those in charge for better conditions, power of trade unions, legal minimum number of personnel required to be present depending on numbers of patients, and so on.
- Trends in development and technological innovation. Better technology leads to longer life expectancy of patients, better quality of life, productivity increases, reduced costs, and so on.
- Increasing expenses. Not only for labour, but also for insurance premiums, better contingency planning (for example, against terrorism and natural disasters), research and development costs, adjustments for changes in costs over time.

This prior-to-design planning can be defined as a process that pre-determines proper selection of:

- *services* which will be in compliance with the facility's strategic purposes, business plan and forecast market development trends;
- *size* as based on demand expectations, available personnel and equipment and level of comfort;
- *locality* as based on access routes, operational efficiency and suitability of building(s);
- *structure of financing* such as from own funds, credit, leasing, shared private and public resources.

18.3 Design phase

Cooperation with a designer should commence as soon as possible. However, it is mainly the employer who will have to thoroughly consider all priorities at the planning phase. With respect to priorities and limits on the employer's side, the level of detail into which the tender design should go into must also be considered. Sometimes it is up to the designer to come up with alternative solutions while respecting the limitations imposed by the employer. Usually, the employer and their consultants should offer alternatives in respect of their intentions, strategies and objectives.

Apart from the wide range of services to be provided, a health care facility must serve many diverse users and other concerned parties. Ideally, the owner's or user's key employees or representatives should take part in the design preparation phase. The designer, however, must also guarantee efficiency gains and benefits from the standpoint of patients, visitors, auxiliary personnel, volunteers and service providers who do not usually take part in these design preparation efforts.

A well-designed health care facility, such as a hospital, will have to efficiently harmonize the functional requirements with the needs of its various users. The following sections will focus on the most significant health care facilities, i.e. hospitals.

18.4 Basic structure of a hospital

The basic structure of a hospital tends to be as follows:

- Inpatient section/hospitalized patients
- Outpatient section
- Diagnostics department (complementary)
- Customer care facility
- Office areas
- Areas for support services and maintenance
- Areas for research, education and training
- Relaxation and entertainment areas
- Parking, traffic and access routes.

The individual parts are functionally interconnected to form various configurations. This allows for efficient logistics and for effective movement and communication to take place there. Possible configurations then depend on limitations due to on-site and climatic conditions, neighbouring buildings, budget constraints and so on.

Regardless of location, size or budget, all hospitals have some common characteristics. In particular, those dealing with efficiency and cost effectiveness, flexibility, expandability, therapeutic requirements, cleanliness and hygiene, access requirements, internal circulation and logistics, aesthetics, safety and use of information technologies.

18.5 Efficiency and cost effectiveness

Efficient configuration of a hospital should:

- allow efficient work of employees by minimizing distances between frequented areas;
- allow easy monitoring of patients, given the limited number of health care personnel;
- include all necessary areas, but avoid unnecessary ones. Making use of adjacent areas and multipurpose areas;

- provide an efficient system of logistics;
- consolidate outpatient functions on the ground floor for immediate access;
- put together groups or combinations of active areas meeting similar requirements due to their functional neighbourhood (such as placing the intensive surgical care unit next to the operating theatres).

18.6 Flexibility and expandability

Health care will face ever-growing demands on facilities and treatment methods. In order to sustain steady development, hospitals should:

- follow a modular concept of planning and spatial layout;
- use standard sizes of rooms as often as possible;
- be equipped with easily available and modifiable electro-mechanical systems;
- be ready for future expansion and reconstruction (plugged fresh and wastewater piping connections, hidden portals in the event of underground logistics).

Reconstructions are usually carried out on an existing facility which brings with it huge risks. A hospital, for example, is interwoven with a multitude of networks such as medical gas or oxygen systems. Failure of the latter may threaten human life and must, therefore, be kept operable during reconstruction. A robotic rail transport network is another example of an internal system in a hospital used to transport ready-made meals, newly washed laundry and so on. Piping and fast transfer pneumatic-tube systems are used to move waste to an incineration plant and laundry to a dry-cleaning plant. All such systems feature sophisticated record keeping of their use.

18.7 Therapeutic environment

Inpatients are often scared and embarrassed by hospitals and these feelings may hinder their therapy. This is why great effort has to be made in making their stay as comfortable as possible. An interior design architect plays a key role in creating an environment enabling maximum therapeutic effect. Interior design should be based on an understanding of the facility as a whole, its purpose and on typical patient profile. Characteristics of patient profile will determine the parameters to which the interior ought to be adapted, for example, to the needs of older patients, those suffering loss of sensual perception and the like. Therapeutic benefits are influenced by the following interior aesthetics.

18.8 Cleaning and maintenance

Hospital areas must be cleaned and the facilities within operational areas maintained. The following will facilitate these tasks:

- suitable and durable finishes of individual functional areas;
- meticulous workmanship of doorframe detail and joint areas to prevent layers of dirt building up in hard to reach places;
- sufficient and suitably placed basement areas for cleaning services;
- special materials, durable finishes and instructions for the sterile areas;
- design and durable finishes of interior parts and compatibility with disinfection systems;
- accessibility of ceiling ducts, skylight spaces and partition walls.

18.9 Controlled circulation and accessibility

A hospital is an intricate system of mutually interrelated functions that require a steady movement of people and things. This circulation must be coordinated. Safe access must also be provided for wheelchairs and blind people. Moreover:

- When visiting diagnostic and other treatment areas, outpatients should not be able to access inpatient areas or come into contact with seriously ill or suffering patients.
- Typical routes frequented by outpatients must be simple and clearly sign posted.
- Visitors must have simple and direct routes to every patient-bed unit without intruding into other functional areas.
- Patient and visitor areas must be isolated from operational, logistic, storage and other similar areas.
- Handling of waste, recyclables and contaminated materials must be separated from areas where food is prepared and fresh supplies handled. Both of these routes must be separate from the routes for patients and visitors.
- Transfer of the deceased to post-mortem rooms and morgues must be out of patient and visitor sight.
- Dedicated lifts for supplies, food and maintenance must be available.

18.10 Aesthetics

The aesthetics of an area closely relates to the therapeutic environment to be set up. Outer surroundings are also vital for improving the overall image of a hospital and are, in themselves, an important marketing tool. A better living environment will also help improve employee morale and patient care. For example, through:

- greater use of natural daylight, natural materials and aesthetic surface finishes;
- use of visual stimuli such as works of art;
- attention paid to dimensions, colours, scaling and details;
- clear, open and spacious public areas;
- homely, intimate atmosphere in patient rooms, common rooms, meeting rooms and offices;
- exterior design compatibility with surrounding environment.

18.11 Health and safety

Hospitals have to comply with health and safety requirements in connection with:

- protection of property – including hazardous substances and drugs;
- protection of patients and employees;
- keeping violent or unstable patients under control;
- anti-terrorist measures.

Alarms and evacuation functions must have manual override capabilities to minimise the consequences of potential evacuations. For example, an evacuation due to a false alarm may have fatal consequences for seriously ill patients. Therefore, fire and alarm procedures have to be properly considered.

Drug preservation systems rank among other specifics. Monitoring and maintaining the temperature at which the drugs are kept is essential – even in the event of power failures. Alternative/back up emergency radio frequencies are another necessity. A wi-fi signal, for example, can jam other networks. Therefore, it is up to construction contractors to test what problems frequency interference may cause. Communication and control signals may affect sensitive electronic equipment and can interfere with things like window blind control or pacemakers. All technologies must, therefore, be tested for electromagnetic compatibility.

18.12 Use of information technology

Information technologies and methods of their use affect the efficiency of a hospital. Their applications are mainly as follows:

- *Informing patients and their relatives*. A hospital's web site is becoming increasingly important for this purpose. This is a portal where people can communicate with the hospital and find out important information. For example, registration processes, planning of examinations and treatments, informing future patients what to expect in hospital, fostering research, education and so on.
- *Facilitating communications between physicians*. Such as in the fields of personnel ratings, education, clinical research, record keeping, consultancy and diagnostics.
- *Facilitating communication between employees*. Such as for recruiting new personnel, rating employee benefits, continuing professional education, discussing routine practice and so on.
- *Payments*. Invoicing, claims, contracts, communication with contractors and the like can be carried out by means of the information systems.

18.13 Relevant regulations and standards

Hospitals rank themselves among the most regulated types of buildings worldwide. Individual countries usually have mandatory regulations specifying the requirements for material and technical equipment of their health care facilities.

Regulations are typically also in place for outpatient care, single-day inpatient care, hospital care, pharmacy care, medical supply haulage and ambulances.

These specific regulations are complemented by general ones such as:

- land-use planning, zoning and construction permit procedures;
- technical requirements of construction, buildings and plants;
- general technical requirements that ensure barrier-free and disabled access to buildings;
- fire safety and cooperation with state fire fighting bodies;
- occupational health and safely;
- drugs handling;
- radiation protection;
- infectious disease escalation contingency plans and hygienic requirements;
- waste management.

18.14 Health care facility construction project: Suitable delivery method

The following can be used as a guide when a suitable method of delivery is to be selected:

- extent of the employer's involvement in the project;
- employer's right to instruct variations;
- employer's position in claiming design defects;
- speed; and
- probability that the bid price will be kept.

18.14.1 Extent of employer's involvement in the project

Under General Contracting (GC), the engineer administers the project on behalf of the employer. The employer's own involvement is therefore not as extensive as in Design-Build (DB) projects. Close cooperation between the employer and construction manager is expected within a Construction Management (CM) project. This close cooperation begins at the preparation phase - i.e. before project commencement. This makes CM problematic for public projects as there may be non-transparent or otherwise biased conduct of the employer to other candidates. However, for the construction of health care facilities in general, the CM seems to be the best solution in respect of the extent to which the employer can get involved because, as mentioned, the employer's or user's key employees and representatives should take part in the design preparation phase and to jointly develop the basic and detailed design.

18.14.2 Employer's right to instruct variations

The lowest number of variation instructions is expected to appear in DB projects because it should mainly be up to the contractor as to how to carry out the works.

Interventions with the contractor's methods, processes and sequencing could result in major claims on the contractor's side (increasing the contract price or extending time for completion).

Variations are relatively frequent in GC. Here, the employer's basic design is being developed by the contractor into the detailed design which evokes variations. In the case of CM, the employer's variations then tend to appear on a regular basis – typically in residential complex projects.

Concerning the construction of health care facilities, the quality of project preparation, degree to which the user's visions and needs have been discussed in time, the employer's wish to intervene with medical technology deliveries and the like will obviously be vital for the employer's need for variations. It is then very likely that unique needs will develop and variations become necessary. Therefore, CM seems to be the most efficient delivery method.

18.14.3 Employer's position in claiming design defects

The contractor will carry out the project according to the employer's design under GC. Responsibility for the design (scope of work correctness, feasibility, defects) rests with the employer and its designer. The contractor will develop the design to reflect the reality encountered during realisation. There are two designs in fact - the basic and the detailed. This may lead to uncertainty in terms of responsibility for particular errors in the design and can give rise to disputes. As such, the employer's position may become complicated in pursuing the claims for design errors against the contractor. The employer's designer will typically be in conflict with the contractor's designer around professional issues if problems arise. Within a DB project, the contractor is, for most part, responsible for both the design and construction works (single point responsibility). Disputes about the design should, therefore, largely disappear and strengthen the employer's position whenever pursuing claims for design errors.

The employer's direct links to individual contractors is an advantage in the case of a CM project. However, responsibility for management, construction and design still remains divided because the designer, contractor a construction manager are different entities.

18.14.4 Speed

GC is the slowest delivery method because there is no overlap of the design and construction phases. In DB on the other hand (where both of these phases overlap each other), the overall time tends to be shorter. A CM project presumes cooperation between the construction manager and the employer from the design preparation phase to ensure quickest possible completion.

Before the construction of a health care facility commences, the employer must determine if earliest possible completion time is the main priority.

18.14.5 Certainty of the bid price

The lowest probability that the stated bid price will be kept is under the CM method, followed by GC and, finally, by DB projects (highest probability). In any event, the employer must determine what weight to give the contract price criterion even here, and take into account other priories and options.

18.14.6 Final evaluation of the suitable delivery method

Construction contracts are awarded via tender. Thus, selection of delivery method is closely related to the method of tendering. The purpose of the tender is to select – within a certain period of time – an appropriate contractor based on their bid.

As discussed, a construction project (in general) and a health care facility project (in particular) is a very unique set-up of processes. This kind of temporary multi-organization process and the successful management of it will depend on realized hazards, particular set-up of relationships between construction project participants and expressly stated employer priorities such as time and cost.

It should, however, be stressed here that there is a substantial difference between public and private contracts for the construction of a health care facility. In the case of public projects it is common for the employer, i.e. the state or one of its agencies to have their hands tied by rigid public procurement legislation.

When lowest bid price is the only criterion, tendering will often narrow the choice of delivery method to GC. In the case of public contracts, any effective use of the CM system is often excluded. This is despite the fact that this system would otherwise be the most suitable option in terms of management and organization of a health care facility construction project. One and the same designer and construction manager can, within a CM project, contribute to the preparation, design and construction phases.

A contract funded by private entities may provide more freedom to the employer in determining the priorities. This will be reflected in more efficient methods of planning, project preparation, procurement, management and coordination of the construction project.

Without doubt, preparation of the project by the employer constitutes the most important phase for successful completion of a health care facility construction project. With a public project, the employer will again be limited when investing in preparations, regardless of whether by lack of human resources, necessity to select consultants based on the lowest price criterion, hesitations in investing sufficient funding, inexperience and the like.

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Appendix A: Interactive Exercises

A.1 Interactive exercise 1: Delivery method selection

Assisted by the instructor, participants will divide themselves into two teams: Team A and Team B. Each team must nominate a speaker who will present arguments on their behalf to the group.

Project: Construction of hydroelectric power plant (with 70% of the contract volume being a civil engineering section with a high proportion of unforeseeable ground risks and the remaining 30 % comprising of plants).

Team A: Evaluate the scenario from the employer's point of view. Prepare a list of arguments for your nominated speaker who will propose a solution, i.e. the appropriate delivery method. The solution must include a recommendation of an appropriate FIDIC form and its modifications. Team A also has to take into account contract price determination, design responsibility, risk allocation, employer's interest to get engaged in contract administration and speed of completion.

Team B: Evaluate the scenario from the contractor's point of view. Prepare a list of arguments for your nominated speaker who will propose a solution, i.e. the appropriate delivery method. The solution must include a recommendation of an appropriate FIDIC form and its modifications. Team B also has to take into account contract price determination, design responsibility, risk allocation, employer's interest to get engaged in contract administration and speed of completion.

Task

Teams have 20 minutes to prepare their list of arguments with supporting reasons.

Team A's nominated speaker will have 5 minutes to present their team's argument.

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Once Team A has finished, Team B may raise objections or suggestions.

Team B's nominated speaker will have 5 minute to present their team's argument.

Once Team B has finished, Team A may raise objections or suggestions.

The instructor will then evaluate the presentations.

A.2 Interactive exercise 2: Claim for delayed site handover

Assisted by the instructor, participants will divide themselves into two teams: Team A and Team B. Each team must nominate a speaker who will present arguments on the team's behalf to the group.

Project: Construction of a highway in Eastern European country for the local highway authority. The employer awards the contract to a contractor comprising of a consortium of international companies.

Conditions of contract: FIDIC CONS 1999 (Red Book).

The employer is responsible for obtaining the construction permit and land expropriation for the temporary and permanent site.

Facts: Handover of the complete site by the employer to the contractor should have taken place in 1/2012 in accordance with the contractor's tender (section 'Time Schedule') where the completion terms of the works are stipulated as particular dates. The employer was supposed to hand over the site to the contractor as a whole. However, the site was handed over gradually (part-by-part). Some parts were missing because they had not been handed over. The employer also failed to obtain the construction permit in time and negotiations with the owner of one section of land became unexpectedly complicated. Construction should have been completed by October 2013.

Following the employer's failure to hand over the complete site, the contractor notified its claim for an extension of time for completion and for additional payment in compliance with the contract.

All sites were gradually handed over to the contractor (the last being in June 2012). A new time for completion was submitted for May 2014 by the contractor.

The employer appeared in urgent need to complete the project at a faster pace and instructed the contractor to accelerate and complete the work within the original timeframe (by October 2013).

Task

Team A: Evaluate the scenario from the employer's point of view. Prepare a list of arguments for your nominated speaker who will propose a procedure (negotiating position) while resolving the claims and acceleration in respect of the employer's interests.

Team B: Evaluate the scenario from the contractor's point of view. Prepare a list of arguments for your nominated speaker who will propose a procedure (negotiating position) while resolving the claims and acceleration in respect of the contractor's interests.

Teams have 30 minutes to prepare their list of arguments and for specifying a procedure in cooperation with the instructor.

Team A's nominated speaker will have 5 minutes to present their team's argument.

Once Team A has finished, Team B may raise objections or suggestions.

Team B's nominated speaker will have 5 minutes to present their team's argument.

Once Team B has finished, Team A may raise objections or suggestions.

The instructor will then evaluate the presentations.

The following issues must be taken into account when presenting your team's argument:

Time schedule (programme):

Does the contractor's tender programme allow for floats?

Site hand-over procedure:

Was it clearly communicated/known (over the course of the construction project) when the individual sites were to be handed over? Did the gradual hand-over of the site have an influence on progress of works and/or on manufacture and delivery of the plants?

Mobilization:

Were contractor capacities fully mobilized over the course of execution of works, as foreseen by the updated time schedules (programmes)?

Was it efficient to demobilize/remobilize capacities in respect of the gradual hand-over of the site?

Acceleration:

Is the instruction to accelerate legitimate?

How will the contractor's project team members respond to a delayed hand-over of the site and to the employer's instructions to accelerate? What will the contractor do if the engineer/employer refuses to accept their entitlement for additional payment due to acceleration?

Claims:

How to prepare/defend the contractor's claim for increased site overheads due to an extension of time?

How to prepare/defend the contractor's claim for increased headquarters' overheads due to an extension of time?

How to prepare/defend the contractor's claim for additional payment due to a more complicated execution of works (loss of productivity) in respect of a gradual hand-over of the site?
How to prepare/defend the contractor's claim for additional payment due to acceleration?
What will the contractor's claim for additional payment and extension of time for completion consist of?
How will the claim be proved, documented and quantified?
How will the claim be defended by the employer?

A.3 Interactive exercise 3: Claim due to suspension of work

Assisted by the instructor, participants will divide themselves into two teams: Team A and Team B. Each team must nominate a speaker who will present arguments on their behalf to the group.

Project: Construction of a power plant for a global corporation (the employer) who will award the contract to a consortium of international companies (contractor).

Conditions of contract: FIDIC EPC 1999 (Silver Book).

Facts: The employer decided to stop project realization in the second year of construction. The contractor's personnel and equipment were fully mobilised. Manufacture of plants had reached an advanced stage.

Task

Team A: Evaluate the scenario from the employer's point of view. Prepare a list of arguments for your nominated speaker who will propose a procedure (negotiating position) for resolving the claims.

Team B: Evaluate the scenario from the contractor's point of view. Prepare a list of arguments for your nominated speaker who will propose a procedure (negotiating position) for resolving the claims.

Teams have 30 minutes to prepare their list of arguments and for specifying a procedure in cooperation with the instructor.

Team A's nominated speaker will have 5 minutes to present their team's argument.

Once Team A has finished, Team B may raise objections or suggestions.

Team B's nominated speaker will have 5 minutes to present their team's argument.

Once Team B has finished, Team A may raise objections or suggestions.

The instructor will then evaluate the presentations.

The following issues must be taken into account when presenting your team's argument:

Suspension:

Does the employer have the right to suspend the works?

What are the consequences the suspension may have from the viewpoint of the contract?

Mobilization:

Were contractor capacities fully mobilized over the course of execution of the works as foreseen by updated time schedules (programmes)?

Was it efficient to demobilize/remobilize capacities due to suspension?

How will the contractor's project team members respond to instructions to suspend work once given?

How will the contractor proceed if the employer refuses to recognize their claims for additional payment and an extension of time for completion due to suspension?

Claims:

How to prepare/defend the contractor's claim for increased site overheads due to suspension?

How to prepare/defend the contractor's claim for increased headquarters' overheads due to suspension?

How to prepare/defend the contractor's claim for additional payment due to a more complicated execution of works (loss of productivity) in respect of the suspension?

What will the contractor's claim for additional payment and suspension for completion consist of?

How will the claim be proved, documented and quantified?

How will the claim be defended by the employer?

A.4 Interactive exercise 4: Subcontractor claim for contractor delay (lack of cooperation, inadequate on-site coordination and improper, unclear and delayed instructions)

Assisted by the instructor, participants will divide themselves into two teams: Team A and Team B. Each team must nominate a speaker who will present arguments on their behalf.

Project: Construction of a coal-fired power plant for a private employer, based on a DB contract in the EPC mode. The contractor will assign part of their contract

(boiler area background plants, fan, and boiler fume extracting filter without desulphurization plant) to a subcontractor.

Facts: Conditions of contract: Contractor's bespoke form of contract in the EPC mode (i.e. maximum risk allocation to the contractor).

Task

Team A: Evaluate the scenario from the contractor's point of view. Prepare a list of arguments for your nominated speaker who will propose a procedure (negotiating position) while resolving the claims.

Team B: Evaluate the scenario from the subcontractor's point of view. Prepare a list for your nominated speaker who will propose a procedure (negotiating position) while resolving the claims.

Teams have 30 minutes to prepare their list of arguments and for specifying a procedure in cooperation with the instructor.

Team A's nominated speaker will have 5 minutes to present their team's argument.

Once Team A has finished, Team B may raise objections or suggestions.

Team B's nominated speaker will have 5 minutes for presenting their position.

Once Team B has finished, Team A may raise objections or suggestions.

The instructor will then evaluate the presentations.

The following additional facts must be considered:

Fact 1 – Lack of cooperation

According to the contract, taking-over of the works by the contractor from the subcontractor is subject to the execution of a demanding test on completion in the presence of electricity, contaminated gas from the boiler, and so on. Such a test is, therefore, dependent on the full completion of plants. The subcontractor will timely perform its works, including an individual test. The remaining parts of the plants (boiler, fume stack) are not yet finished by subcontractors of other contractors. As such, any test on completion cannot take place during take-over. The subcontractor wants to hand over its work and receive payment for it.

Fact 2 – Inadequate on-site coordination

A different site than required and anticipated in the contractor's (subcontractor's) tender documents had been handed over by the employer. The contractor handed over to the subcontractor a site, which was 3 km away from the coal-fired power plant. Additional cost and risks accrue to the subcontractor in connection with transport (such as unloading, loading operations, additional transportation of bulk freight).

Access and on-site roads provided to the subcontractor are used otherwise than anticipated in the contractor's (subcontractor's) requirements and tender documents because of delay of a building section (concrete slab) by the contractor. Several subcontractors use the access roads meaning that the subcontractor had to construct a corridor. Additional cost and risks accrue to the subcontractor.

Fact 3 – Improper, unclear and delayed instructions

The subcontractor notified the contractor that performance parameters of the plant would not be fulfilled because of defective work of one of the other subcontractors. The subcontractor proposed a solution in its design and the contractor is under pressure to provide further instructions for variation including additional payment. Given that no consultation with the employer had taken place, the contractor hesitates in giving such instructions. Meanwhile, additional cost and risks accrue to the subcontractor.

Appendix B: Sample Letters

International Construction Contract Law, First Edition. Lukas Klee.
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B.1 Contractor's sample letters: Notice of probable future event

Contract identification:

Letter identification:

Connected to:

Related correspondence:

Related Sub-Clauses:

Addressed to the Engineer (according to Sub-Clauses 1.1.2.4 and 1.3):

Date:

NOTICE OF PROBABLE FUTURE EVENT
In accordance with Sub-Clause 8.3

Dear ……,

We give you notice of specific probable future event(s) or circumstance(s) as follows:

.....

.....

.....

If the above described event(s) or circumstance(s) occur it (they) may:

(a) adversely affect the Work, namely

.....

.....

(b) increase the Contract Price

.....

(c) delay the execution of Works

.....

Yours sincerely

.....

Contractor (according to Sub-Clauses 1.1.2.3 and 4.3)

Copies to:

Attachments:

B.2 Contractor's sample letters: Notice of contractor's claims

Contract identification:

Letter identification:

Connected to:

Related correspondence:

Related Sub-Clauses:

Addressed to the Engineer (according to Sub-Clause 1.1.2.4 and 1.3):

Date:

NOTICE OF CONTRACTOR'S CLAIM
In accordance with Sub-Clause 20.1

Dear ……,

We give you notice of claim for

(a) an Extension of Time for Completion according to Sub-Clause 8.4

.....

(b) additional payment

.....

The Contractor considers itself to be entitled referring to the following Clauses of the Conditions:

Example:

(a) *Error in Employer's Requirements 1.9 (P&DB), Delayed Drawings and Instructions 1.9 (CONS)*
(b) *Right of Access to the Site 2.1*
(c) *Setting Out 4.7*
(d) *Unforeseeable Physical Conditions 4.12*
(e) *Fossils 4.24*
(f) *Testing 7.4*
(g) *Extension of Time for Completion 8.4*
(h) *Consequences of Suspension 8.9*
(i) *Taking-Over of Parts of the Works 10.2*
(j) *Interferences with Tests on Completion 10.3*
(k) *Delayed Test 9.2*
(l) *Payment in Applicable Currencies 13.4*
(m) *Adjustments in Legislation 13.7*

Or otherwise in connection with the Contract:

.....

The Contractor notifies the following events or circumstances as reasons for the Claim:

.....

.....

Yours sincerely

.....

Contractor (according to Sub-Clauses 1.1.2.3 and 4.3)

Copies to:

Attachments:

B.3 Contractor's sample letters: Contractor's claim No._____submission (quantification)

Contract identification:

Letter identification:

Connected to:

Related correspondence:

Related Sub-Clauses:

Addressed to the Engineer (according to Sub-Clause 1.1.2.4 and 1.3):

Date:

CONTRACTOR'S CLAIM NO. _____SUBMISSIONS (QUANTIFICATION)
In accordance with Sub-Clause 20.1

Dear …… ,

With Reference to the Contractor's Claim issued on .....submitted to the Engineer we send you:

(a) *fully detailed claim,*
(b) *fully detailed claim, stating that the event or circumstance giving rise to the claim has a continuing effect. This fully detailed claim shall be considered as interim; we shall send further interim claims at monthly intervals, giving the accumulated delay and/or amount claimed.*

Therefore under this claim the Contractor requests:

1. ..... days of Extension of Time for Completion.
2. To adjust the contract amount by an additional payment of .....

Yours sincerely

.....
Contractor (according to Sub-Clauses 1.1.2.3 and 4.3)

Copies to:

Attachments:

B.4 Contractor's sample letters: Request for evidences of financial arrangements

Contract identification:

Letter identification:

Connected to:

Related correspondence:

Related Sub-Clauses:

Addressed to the Employer (according to Sub-Clauses 1.1.2.2 and 1.3):

Date:

REQUEST FOR EVIDENCES OF FINANCIAL ARRANGEMENTS
In accordance with Sub-Clause 2.4

Dear ……,

The Contractor requests from the Employer to submit reasonable evidence that financial arrangements have been made and are being maintained which enable the Employer to pay the Contract Price in accordance with Sub-Clause 14. Any adjustments to the Accepted Contract Amount will be considered.

Yours sincerely

.....

Contractor (according to Sub-Clauses 1.1.2.3 and 4.3)

Copies to:

Attachments:

B.5 Contractor's sample letters: Written confirmation of oral instruction

Contract identification:

Letter identification:

Connected to:

Related correspondence:

Related Sub-Clauses:

Addressed to the Engineer (according to Sub-Clauses 1.1.2.4 and 1.3):

Date:

WRITTEN CONFIRMATION OF ORAL INSTRUCTION
In accordance with Sub-Clause 3.3

Dear ……,

On ..... (date) the Engineer gave an Instruction to the Contractor which was understood as

.....

.....

.....

Due to the fact that this instruction was made orally, the Contractor confirms this instruction and will comply immediately.

As far as a possible Extension of Time for Completion (according Sub-Clause 8.4) is concerned, the Contractor will give notice within 28 days after issuing this confirmation.

Further remarks:

.....

.....

.....

Yours sincerely

.....

Contractor (according to Sub-Clauses 1.1.2.3 and 4.3)

Copies to:

Attachments:

B.6 Contractor's sample letters: Notice of dissatisfaction with a determination of the engineer

Contract identification:

Letter identification:

Connected to:

Related correspondence:

Related Sub-Clauses:

Addressed to the other Party with a copy to the Engineer (according to Sub-Clauses 1.1.2.4 and 1.3):

Date:

NOTICE OF DISSATISFACTION WITH A DETERMINATION OF THE ENGINEER

Dear …… ,

We give you notice of dissatisfaction with the Engineer's determination dated *(insert date)* with reference to Claim notice no. *(insert number)*.

We give notice that the Engineer failed to render its determination within due time after receiving the claim notice no. *(insert number)* and supporting particulars on .....

We consider that failure to render a determination in due time constitutes a dispute under Sub-Clause 20.4.

Yours sincerely

.....

Contractor (according to Sub-Clauses 1.1.2.3 and 4.3)

Copies to:

Attachments:

B.7 Contractor's sample letters: Notice of contractor's entitlement to suspend work

Contract identification:

Letter identification:

Connected to:

Related correspondence:

Related Sub-Clauses:

Addressed to the Employer (according to Sub-Clauses 1.1.2.2 and 1.3):

Date:

NOTICE OF CONTRACTOR'S ENTITLEMENT TO SUSPEND WORK
In accordance with Sub-Clause 16.1

Dear ……,

The Engineer failed to certify in accordance with Sub-Clause 14.6 *(or the Employer failed to comply with Sub-Clause 2.4 or Sub-Clause 14.7)* in the following manner
.....

We give you notice that on the ... of ..... 201*X* we will suspend work *(or reduce the rate of work)* unless and until we receive the Payment Certificate *(reasonable evidence or payment, as the case may be and as described in the notice)*

.....

.....

.....

Yours sincerely

.....
Contractor (according to Sub-Clauses 1.1.2.3 and 4.3)

Copies to:

Attachments:

B.8 Contractor's sample letters: Notice of contractor's claim under the Sub-Clause 16.1

Contract identification:

Letter identification:

Connected to:

Related correspondence:

Related Sub-Clauses:

Addressed to the Engineer (according to Sub-Clauses 1.1.2.4 and 1.3):

Date:

NOTICE OF CONTRACTOR'S CLAIM UNDER THE SUB-CLAUSE 16.1
In accordance with Sub-Clauses 20.1 and 16.1

Dear ……. ,

Following our letter Nr/Ref .... we give you notice of claim for

(a) an Extension of Time for Completion according to Sub-Clause 8.4

.....

(b) additional payment

.....

The Contractor considers itself to be entitled referring to the Sub-Clause 16.1.

The Contractor notifies the following events or circumstances as reasons for the Claim:

The Engineer failed to certify in accordance with Sub-Clause 14.6 *(or the Employer failed to comply with Sub-Clause 2.4 or Sub-Clause 14.7)* in the following manner

.....

.....

The Contractor, after giving not less than 21 days' notice to the Employer, suspended work.

Yours sincerely

.....

Contractor (according to Sub-Clauses 1.1.2.3 and 4.3)

Copies to:

Attachments:

B.9 Contractor's sample letters: Application for taking-over certificate

Contract identification:

Letter identification:

Connected to:

Related correspondence:

Related Sub-Clauses:

Addressed to the Engineer (according to Sub-Clauses 1.1.2.4 and 1.3):

Date:

APPLICATION FOR TAKING-OVER CERTIFICATE
In accordance with Sub-Clause 10.1

Dear ……,

We hereby apply for a Taking Over Certificate for the following works:

.....

Yours sincerely

.....
Contractor (according to Sub-Clauses 1.1.2.3 and 4.3)

Copies to:

Attachments:

B.10 Employer's sample letters: Notice of employer's claim

Contract identification:

Letter identification:

Connected to:

Related correspondence:

Related Sub-Clauses:

Addressed to the Contractor (according to Sub-Clauses 1.1.2.3 and 4.3) and the Engineer (according to Sub-Clauses 1.1.2.4 and 1.3):

Date:

NOTICE OF EMPLOYER'S CLAIM
In accordance with Sub-Clause 2.5

Dear ……,

We give you notice of claim in connection with the following event(s) or circumstance(s) as reason for the claim

(a) *for the below described payment under the Contract Conditions or otherwise in connection with the Contract.*

.....

(b) *for delay damages according to Sub-Clause 8.7 for:*

.....

(c) *for extension of Defects Notification Period of ..... The expiry of the Defect Notification Period is....., therefore this claim notice is made in time.*

The Engineer is requested to proceed in accordance with Sub-Clause 3.5.

Yours sincerely

.....

Employer (according to Sub-Clauses 1.1.2.2 and 1.3)

Copies to:

Attachments:

B.11 Employer's sample letters: Answer to request for evidence of financial arrangements

Contract identification:

Letter identification:

Connected to:

Related correspondence:

Related Sub-Clauses:

Addressed to the Contractor (according to Sub-Clauses 1.1.2.3 and 4.3) and the Engineer (according to Sub-Clauses 1.1.2.4 and 1.3):

Date:

ANSWER TO REQUEST FOR EVIDENCE OF FINANCIAL ARRANGEMENTS
In accordance with Sub-Clause 2.4

Dear ……,

(a) *With the attached documents the Employer gives evidence of its financial arrangements at the request of the Contractor.*
(b) *The Employer informs the Contractor of material changes in the financial arrangements. The attached documents are the detailed particulars.*

Yours sincerely

.....

Employer

Copies to:

Attachments:

B.12 Engineer's sample letters: Engineer's determination

Contract identification:

Letter identification:

Connected to:

Related correspondence:

Related Sub-Clauses:

Addressed to the Parties

Date:

ENGINEER'S DETERMINATION
In accordance with Sub-Clause 3.5

Dear ……,

We give you notice of my determination as to claim no. *(insert number)*. With regard to all relevant facts and circumstances, we determine that the Contractor is entitled to ..... days Extension of Time for Completion.

We have given approval/ disapproval with comments on

.....

We have consulted with the parties who have submitted the following statements:

.....

.....

.....

The Contractor has submitted

(a) particulars
(b) supported by evidence
(c) including contemporary records
(d) which we have monitored

The Contractor has given notice of..... on *(insert date)*:

(a) *This was in time because the Contractor became aware of the relevant facts on* .....
(b) *This was out of time because the Contractor became aware of the relevant facts on* .....

In accordance with Sub-Clause..... the Contractor is entitled to an extension of Time for Completion. In accordance with Sub-Clause 8.4 the relevant event must have an impact on an activity which lies on the critical path. Both requirements are met.

Yours sincerely

.....

Engineer (according to Sub-Clauses 1.1.2.4 and 1.3)

Copies to:

Attachments:

B.13 Engineer's sample letters: Engineer's instruction

Contract identification:

Letter identification:

Connected to:

Related correspondence:

Related Sub-Clauses:

Addressed to the Contractor (according to Sub-Clauses 1.1.2.3 and 4.3)

Instruction no. ***(insert number)***

Date:

ENGINEER'S INSTRUCTION
In accordance with Sub-Clause 3.3

Dear ……,

We formally instruct you according to Sub-Clause 7.6:

(a) *To remove from the Site and replace any Plant or materials which is/are not in accordance with the Contract.*
(b) *To remove and re-execute any other work which is not in accordance with the Contract.*
(c) *To execute any work which is urgently required for safety of the Works.*

In particular we instruct you (choose the appropriate remedy) to remove, to re-execute and/or to execute (describe the Plant, material, work).

Yours sincerely

.....
Engineer (according to Sub-Clauses 1.1.2.4 and 1.3)

Copies to:

Attachments:

B.14 Engineer's sample letters: Engineer's notice to correct

Contract identification:

Letter identification:

Connected to:

Related correspondence:

Related Sub-Clauses:

Addressed to the Contractor (according to Sub-Clauses 1.1.2.3 and 4.3)

Instruction no. ***(insert number)***

Date:

ENGINEER'S NOTICE TO CORRECT
In accordance with Sub-Clause 15.1

Dear ……,

The Contractor failed to carry out the following obligation under the Contract: .....

We give you a notice to make good the failure and to remedy it within ... days.

Yours sincerely

.....
Engineer (according to Sub-Clauses 1.1.2.4 and 1.3)

Copies to:

Attachments:

B.15 Engineer's sample letters: Engineer's instruction to remove a person employed on the site

Contract identification:

Letter identification:

Connected to:

Related correspondence:

Related Sub-Clauses:

Addressed to the Contractor (according to Sub-Clauses 1.1.2.3 and 4.3)

Instruction no. ***(insert number)***

Date:

ENGINEER'S INSTRUCTION TO REMOVE A PERSON EMPLOYED ON THE SITE
In accordance with Sub-Clause 6.9

Dear …… ,

We hereby require the Contractor to immediately remove the following person .....who:

(a) persists and engages in misconduct or lack of care;
(b) carries out duties incompetently or negligently;
(c) fails to conform with the provisions of the Contract; or
(d) persists and engages in conduct which is prejudicial to safety, health, or the protection of the environment.

Yours sincerely

.....

Engineer (according to Sub-Clauses 1.1.2.4 and 1.3)

Copies to:

Attachments:

B.16 Engineer's sample letters: Engineer's instruction – lack of mobilisation

Contract identification:

Letter identification:

Connected to:

Related correspondence:

Related Sub-Clauses:

Addressed to the Contractor (according to Sub-Clauses 1.1.2.3 and 4.3)

Instruction no. ***(insert number)***

Date:

ENGINEER'S INSTRUCTION – LACK OF MOBILISATION
In accordance with Sub-Clauses 4.21, 6.10, 8.3, 8.6

Dear ……,

The Contractor submitted the following number of each class of Contractor's Personnel and of each type of Contractor's Equipment on the Site:..... The actual state on the Site does not correspond with the planned mobilization and actual progress is too slow to complete within the Time for Completion *(and/or (b) progress has fallen (or will fall) behind the current programme under Sub-Clause 8.3)*,

We hereby instruct you to submit, under Sub-Clause 8.3, a revised programme and supporting report describing the revised methods which the Contractor proposes to adopt in order to expedite progress and complete within the Time for Completion.

Yours sincerely

.....

Engineer (according to Sub-Clauses 1.1.2.4 and 1.3)

Copies to:

Attachments:

Appendix C: Dictionary of Construction Terms: Chinese, Czech, English, French, German, Hungarian, Polish, Portuguese, Russian, Spanish

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C.1 Dictionary – General part

ENGLISH	GERMAN	FRENCH	HUNGARIAN	CZECH
Employer	Besteller	Maître de l´ouvrage	Megrendelő	Objednatel
Contractor	Unternehmer	Entrepreneur	Vállalkozó	Zhotovitel
Engineer	Ingenieur	Ingénieur	Mérnök	Správce stavby
Claim	Anspruch	Réclamation	Követelés	Nárok
Notice of the claim	Anzeige des Anspruches	Avis de la réclamation	Követelés bejelentése	Oznámení nároku
Claim for extension of the time for completion	Anspruch an die Verlängerung der Baufertigstellungszeit	Réclamation à la prolongation du délai d´achèvement	A megvalósítás időtartamának meghosszabbítására irányuló követelésiranyulo koveteles	Nárok na prodloužení lhůty pro dokončení
Claim for additional payment	Anspruch an die Zusatzvergütung	Réclamation au paiement supplémentaire	Többletkifizetés követelése	Nárok na dodatečnou platbu
General conditions	Allgemeine Bedingungen	Conditions générales	Általános feltételek	Všeobecné podmínky
Particular conditions	Besondere Bedingungen	Conditions particulières	Különös feltételek	Zvláštní podmínky
Contract	Vertrag	Contrat	Szerződés	Smlouva o dílo
Contract agreement	Vertragsdokument	Accord contractuel	Szerződéses feltételek összefoglalása (a szerződéses megállapodás)	Souhrn smluvních dohod
Letter of acceptance	Annahmeschreiben	Lettre d´acceptation	Elfogadó levél	Dopis o přijetí nabídky
Letter of tender	Angebotsschreiben	Lettre d´offre	Ajánlati nyilatkozat	Nabídkový dopis
Specifications	Leistungsbeschreibung	Devis descriptif	Részletes előírások (műszaki leírások)	Specifikace
Drawings	Zeichnungen	Dessins	Tervrajzok	Výkresy
Schedules	Listen	Echéanciers	Jegyzékek	Ostatní přílohy
Tender	Angebot	Offre	Ajánlat	Nabídka

RUSSIAN	POLISH	SPANISH	PORTUGUESE	CHINESE
Заказчик	Zamawiający	Contratante	Contratante	业主
Подрядчик	Wykonawca	Contratista	Contratado (empreiteiro)	承包商
Инженер	Inżynier	Ingeniero	Engenheiro	工程师
Претензия (требование)	Roszczenie	Reclamación	Demanda (reivindicação)	索赔
Уведомление о претензии	Powiadomienie o roszczeniu	Notificación de la reclamación	Aviso de demanda (notificação de reivindicação)	索赔通知
Требование о продлении срока завершения работ	Roszczenie do przedłużenie czasu na ukończenie	Reclamación para prórroga del plazo de terminación	Demanda (reivindicação) para prorrogação do prazo para conclusão	竣工时间延期索赔
Требование о дополнительной оплате	Roszczenie o dodatkową płatność	Reclamación para pago adicional	Demanda (reivindicação) para pagamento complementar (adicional)	追加费用索赔
Общие условия	Warunki ogólne	Condiciones generales	Condições gerais	通用条件
Особые условия	Warunki szczególne	Condiciones especiales	Condições especiais (particulares)	专用条件
Контракт	Umowa	Contrato	Contrato	合同
Договор подряда	Akt umowy	Convenio	Acordo contratual	合同协议书
Извещение об акцепте	List akceptujący	Carta de aceptación	Carta de aceitação (de aceite da proposta)	中标函
Оферта	Oferta	Carta de la oferta	Carta de proposta	投标函
Спецификация (технические условия)	Specyfikacja	Especificaciones (técnicas)	Especificações (descrições técnicas)	技术规程
Чертежи	Rysunki	Planos	Desenhos	图纸
Приложения	Wykazy	Formularios (anexos)	Cronogramas (outros anexos)	数据表
Тендерное предложение	Dokumenty	Oferta	Proposta	投标书

ENGLISH	GERMAN	FRENCH	HUNGARIAN	CZECH
Appendix to tender	Anhang zum Angebot	Appendice de l´offre	Ajánlati nyilatkozat függeléke	Příloha k nabídce
Bill of quantities	Leistungsverzeichnis	Devis quantitatif (cahier de charges)	Mennyiségkimutatás	Výkaz výměr
Dispute adjudication board	Streitbeilegungsstelle	Bureau de conciliation	Döntőbizottság	Rada pro řešení sporů
Commencement date	Tag des Baubeginns	Date de commencement	Kezdési időpont	Datum zahájení prací na díle
Time for completion	Baufertigstellungszeit	Délai d´achèvement	Megvalósítás időtartama	Lhůta pro dokončení
Tests on completion	Fertigstellungstests	Tests d´ achèvement	Átvételt megelőző Üzempróbák	Přejímací zkoušky
Taking-over certificate	Abnahmebescheinigung	Certificat de réception	Átadás-átvételi igazolás	Potvrzení o převzetí díla
Tests after completion	Tests nach Fertigstellung	Tests après achèvement	Átvétel utáni üzempróbák	Zkoušky po dokončení
Defects notification period	Mängelanzeigefrist	Délai de notification des vices	Jótállási időszak	Záruční doba
Completion of outstanding work and remedying defects	Fertigstellung ausstehender Arbeiten und Behebung von Mängeln	Achèvement des travaux inachevés et suppression des vices	El nem végzett munkák befejezése és hiányok pótlása potlasa	Dokončení zbývajících prací na díle a odstranění vad
Extension of defects notification period	Verlängerung der Mängelanzeigefrist	Prolongation du délai de notification des vices	Jótállási időszak kiterjesztése	Prodloužení záruční doby
Performance certificate	Erfüllungsbescheinigung	Certificat d´exécution	Teljesítési igazolás	Potvrzení o provedení díla
Taking over of the works and sections	Abnahme der Arbeiten und Abschnitte der Arbeiten	Réception des travaux et des sections	A létesítmény és szakaszok átvétele	Převzetí díla a sekcí
Accepted contract amount	Vereinbarte Auftragssumme	Montant contractuel accepté	Elfogadott ajánlati ár	Přijata nabídková cena
Contract price	Vertragspreis	Prix contractuel	Szerződéses ár	Cena díla
Cost	Kosten	Coûts	Költségek	Náklady
Final payment certificate	Schlusszahlungs-bescheinigung	Certificat de paiement final	Végszámla fizetési igazolás	Potvrzení konečné faktury

RUSSIAN	POLISH	SPANISH	PORTUGUESE	CHINESE
Приложение к оферте	Załącznik do oferty	Anexo a la oferta	Anexo à proposta	投标函附录
Сметный расчет	Przedmiar robót	Lista de cantidades	Relação (planilha) de quantidades	工程量表
Совет по урегулированию споров	Komisja rozjemstwa w sporach	Comisión para la resolución de controversias (mesa de resolución de conflictos)	Conselho de conciliação (Junta de conflitos)	争端裁决委员会
Дата начала работ (строительства объектов)	Data rozpoczęcia	Fecha de inicio	Data de início (dos trabalhos)	开工日期
Срок завершения работ (строительства объектов)	Czas na ukończenie	Plazo de terminación (ejecución)	Prazo para término (conclusão)	竣工时间
Контрольные испытания по завершении строительства	Próby końcowe	Pruebas a la terminación	Testes finais (na conclusão)	竣工检验
Акт сдачи-приемки	Świadectwo przejęcia	Certificado de recepción de obra	Certificado de recepção da obra (de ocupação)	接收证书
Контрольные испытания после завершения строительства	Próby eksploatacyjne	Pruebas posteriores a la terminación	Testes depois do término (após a conclusão)	竣工后的检验
Гарантийный срок (период)	Okres zgłaszania wad	Período para la notificación de defectos	Período de notificação de falhas (prazo de garantia)	缺陷通知期
Завершение незаконченных работ и устранение недостатков	Ukończenie zaległej pracy i usunięcie wad	Terminación de trabajos tendientes y reparación de defectos	Finalização dos trabalhos restantes na obra e eliminação de defeitos (conclusão de obras pendentes e reparo de falhas)	完成扫尾工作和修补缺陷
Продление гарантийного срока (периода)	Przedłużenie okresu zgłaszania wad	Prórroga del plazo para la notificación de defectos	Prolongamento do prazo de garantia (prorrogação do período de notificação de falhas)	缺陷通知期的延长
Сертификат об исполнении контракта (свидетельство о выполнении условий контракта)	Świadectwo wykonania	Certificado de cumplimiento	Certificado de execução da obra (certificado de desempenho)	履约证书
Приемка объектов и их частей	Przejęcie robót i odcinków	Recepción de las obras y secciones	Recepção da obra e de seções (ocupação das obras e seções)	工程或区段的接收
Акцептованная сумма контракта	Zaakceptowana kwota kontraktowa	Monto contractual aceptado (propuesta económica)	Preço contratual aceito (valor aceito do contrato)	中标合同款额
Цена контракта	Cena kontraktowa	Precio del contrato	Preço da obra (preço do contrato)	合同价格
Расходы	Koszt	Costo	Despesas (custo)	费用
Окончательный (итоговый) платежный сертификат	Ostateczne świadectwo płatności	Certificado de pago final	Certificado de pagamento final	最终支付证书

ENGLISH	GERMAN	FRENCH	HUNGARIAN	CZECH
Final statement	Schlussrechnung	Décompte final	Készre jelentési nyilatkozat	Konečný soupis provedených prací
Application for final payment certificate	Beantragung der Schlusszahlungs bescheinigung	Demande de certificat de paiement final	Végszámla fizetési Igazolás igénylése	Žádost o potvrzení konečné faktury
Foreign currency	Ausländische Währung	Devise étrangère	Valuta	Cizí měna
Interim payment certificate	Zwischenzahlungs-bescheinigung	Certificat de paiement provisoire	Közbenső fizetési Igazolás	Potvrzení dílčí faktury
Local currency	Lokale Währung	Devise locale	Helyi valuta	Místní měna
Payment certificate	Zahlungsbescheinigung	Certificat de paiement	Fizetési igazolás	Potvrzení faktury
Application for interim payment certificate	Beantragung einer Zwischenzahlungs-bescheinigung	Demande de certificats de paiement provisoire	Közbenső fizetési Igazolás igénylése	Žádost o potvrzení dílčí faktury
Provisional sum	Behelfsbetrag	Somme provisionelle	Feltételes összeg	Předběžná částka
Retention money	Einbehalte	Retenue de garantie	Visszatartott összeg	Zadržné
Statement	Rechnung	Décompte	Kimutatás	Soupis provedených prací
Contractor's equipment	Ausrüstung des Unternehmers	Équipement de l´entrepreneur	Vállalkozó eszközei	Vybavení zhotovitele
Goods	Gütern	Marchandises	Áruk	Zboží
Materials	Materialien	Matériaux	Anyagok	Materiály
Plant	Anlagen	Installations industrielles	Berendezések	Technologické zařízení
Section	Abschnitt	Section	Szakasz	Sekce (oddíl)
Permanent works	Baumassnahmen	Travaux définitifs	Végleges létesítmények	Trvalé zabudované dílo
Temporary works	Behelfsmassnahmen	Travaux provisoires	Ideiglenes létesítmények	Dočasné dílo
Works mean the permanent works and the temporary works, or either of them as appropriate.	Arbeiten werden sowohl die Baumassnahmen als auch die Behelfsmassnahmen verstanden, gegebenenfalls auch beide.	Travaux designe les travaux définitifs et les travaux provisoires, ou le cas échéant un seul des deux.	A létesítmény a végleges létesítményeket és az Ideiglenes létesítményeket is jelenti, vagy bármelyiket szükség szerint.	Dílo označuje trvale zabudované dílo, nebo kterékoliv z nich, podle toho, co přichází v úvahu.

RUSSIAN	POLISH	SPANISH	PORTUGUESE	CHINESE
Окончательный комплект исполнительных записей (Заключительный отчет)	Rozliczenie ostateczne	Declaración final (relación valorada final de las obras ejecutadas)	Relação final dos trabalhos executados (demonstração final)	最终报表
Обращение за окончательным (итоговым) платежным сертификатом	Wystąpienie o ostateczne świadectwo płatności	Solicitud de certificado de pago final	Pedido de certificado do pagamento final	最终支付证书的申请
Иностранная валюта	Waluta obca	Moneda extranjera	Moeda estrangeira	外币
Промежуточный платежный сертификат	Przejściowe świadectwo płatności	Certificado de pago provisional	Certificado de pagamento provisório	期中支付证书
Местная валюта	Waluta miejscowa	Moneda Local	Moeda local	当地币
Платежный сертификат	Świadectwo płatności	Certificado de pago	Certificado de pagamento	支付证书
Обращение за промежуточным платежным сертификатом	Występowanie o przejściowe świadectwa płatności	Solicitud de certificados de pago provisionales	Requisição (pedido) de certificado de pagamento provisório	期中支付证书的申请
Резервная сумма	Kwota warunkowa	Monto provisional (valor estimado/ cantidad provisional)	Valor provisório (quantia provisória)	暂定金额
Сумма удержания	Kwota zatrzymana	Monto retenido	Retenção de garantia (dinheiro retido)	保留金
Комплект исполнительных записей	Rozliczenie	Declaración (relación valorada de las obras ejecutadas)	Relação de trabalhos executados (demonstração)	报表
Оборудование подрядчика	Sprzęt wykonawcy	Equipos del Contratista	Equipamento do contratante (empreiteiro)	承包商的设备
Товары	Dobra	Bienes	Mercadorias (bens)	货物
Материалы	Materiały	Materiales	Materiais	材料
Механизация	Urządzenia	Equipos	Instalações (tecnológicas)	永久设备
Часть	Odcinek	Sección	Seção	区段
Постоянные объекты	Roboty stałe	Obras permanentes	Obra definitiva (permanentes)	永久工程
Временные объекты	Roboty tymczasowe	Obras temporales	Obras temporárias	临时工程
Объекты обозначают как постоянные объекты, так и временные объекты или любые из них, в зависимости от контекста.	Roboty oznaczają roboty stałe i roboty tymczasowe lub jedne z nich, zależnie co jest odpowiednie.	Obras son las obras permanentes y las obras temporales, o cualquiera de ellas según corresponda.	Obras significam as obras permanentes e as obras temporárias, ou qualquer uma das duas, conforme apropriado.	工程 指永久工程和临时工程，或视情况指其中之一。

ENGLISH	GERMAN	FRENCH	HUNGARIAN	CZECH
Contractor's documents	Dokumente des Unternehmers	Documents de l'entrepreneur	Vállalkozó dokumentumai	dokumentace zhotovitele
Employer's equipment	Ausrüstung des Bestellers	Equipement du maître de l´ouvrage	Megrendelő eszközei	Vybavení objednatele
Performance security	Erfüllungssicherheit	Garantie d´exécution	Teljesítési biztosíték	Záruka na povedení díla
Site	Baustelle	Chantier	Helyszín	Staveniště
Unforeseeable means not reasonably foreseeable by an experienced contractor by the date for the submission of the tender.	Unvorhersehbar heisst, dass es auch einem erfahrenen Unternehmer zum Zeitpunkt der Vorlage des Angebots vernünftigerweise nicht möglich gewesen wäre, das Ereignis vorherzusehen.	Imprévisible signifie non raisonnablement prévisible pour un entrepreneur expérimenté à la date de la soumission de l´offre.	Előre nem látható egy tapasztalt vállalkozó által az ajánlat benyújtásáig ésszerűen előre nem látható dolgot jelent.	Nepředvídatelný znamená takový, jenž nemůže být důvodně předpokládán zkušeným zhotovitelem k datu podání nabídky.
Variation means any change to the works, which are instructed or approved as a variation.	Leistungsänderung ist jede Änderung der Arbeiten, die als eine Leistungsänderung angewiesen oder genehmigt ist.	Modifications designe tout changement dans les travaux, qui est ordonné ou approuvé comme une modification.	Változtatás a létesítmény bármely megváltoztatását jelenti, amelyet mint változtatást rendelnek el, vagy hagynak jóvá.	Změna znamená jakoukoliv změnu díla, která je nařízena nebo schválena jako změna.

RUSSIAN	POLISH	SPANISH	PORTUGUESE	CHINESE
Документация подрядчика	Dokumenty wykonawcy	Documentos del contratista	Documentação do contratado (empreiteiro)	承包商的文件
Оборудование Заказчика	Sprzęt zamawiającego	Equipos del contratante	Equipamento do contratante	业主的设备
Обеспечение исполнения Контракта	Zabezpieczenie wykonania	Garantía de cumplimiento	Garantia de execução (da obra)	履约保证
Строительная площадка	Plac budowy	Lugar de las obras	Canteiro de obra (Local)	现场
Непредвиденное обстоятельство обозначает то, что не мог разумно предвидеть опытный подрядчик на дату представления оферты.	Nieprzewidywalne oznacza racjonalnie niemożliwe do przewidzenia przez doświadczonego wykonawcę do daty składania dokumentów ofertowych.	Imprevisible significa lo que no es razonablemente previsible por un contratista con experiencia en la fecha de presentación de la oferta	Imprevisível significa um evento não razoavelmente previsível por um contratante (empreiteiro) experiente até a data-base.	不可预见指一个有经验的承包商在提交投标文件那天还不能合理预见的。
«Изменение» обозначает любое изменение в работах, внесение которого поручено или согласовано как изменение.	Zmiana oznacza każdą zmianę w robotach, poleconą lub zatwierdzoną jako zmiana.	Variación significa cualquier cambio a las obras que es requerido o aprobado como una variación.	Variação significa qualquer mudança nas obras instruída ou aprovada como variação,	变更指按照指令或批准作为变更的对工程的任何变动。

C.2 Dictionary – Contractor's claims

ENGLISH	GERMAN	FRENCH	HUNGARIAN	CZECH
Contractor's claims	Ansprüche des Unternehmers	Réclamations de l´entrepreneur	A vállalkozó követelései	Nároky zhotovitele
1.9 – Delayed drawings or instructions	Verspätete Zeichnungen und Anorderungen	Dessins ou instructions retardés	Tervek vagy utasítások késedelme	Opožděné výkresy nebo pokyny
2.1 – Right of access to the site	Recht auf Zugang zur Baustelle	Droit à l´accés au chantier	A helyszínre való bejutás joga	Právo vstupu na staveniště
4.7 – Setting out	Absteckungen	Implantation des ouvrages	Kitűzés	Vytyčování
4.12 – Unforeseeable physical conditions	Unvorhersehbare natürliche Bedingungen	Conditions physiques imprévisibles	Előre nem látható helyszíni körülmények Előre nem látható helyszíni körülmények	Nepředvídatelné fyzikální podmínky (jevy)
4.24 – Fossils	Funde	Fossiles	Régészeti leletek	Archeologické nálezy
7.4 – Testing	Testläufe	Mise à l´épreuve	Üzempróbák	Zkoušení
8.4 – Extension of time for completion	Verlängerung der Baufertigstellungszeit	Prolongation du délai d´achèvement	A megvalósítás időtartamának meghosszabbítása	Prodloužení lhůty pro dokončení
8.5 – Delays caused by authorities	Durch Behörden verursachte Verzögerungen	Retardes causés par les autorités	Hatóságok által okozott késedelmek	Zpoždění způsobená úřady
8.9 – Consequences of suspension	Folgen der Suspendierung	Conséquences de la suspension	Felfüggesztés következményei	Následky přerušení
10.2 – Taking over of parts of the works	Teilabnahme	Réception des parties des travaux	A létesítmény részeinek átvétele atvetele	Převzetí části díla
10.3 – Interference with tests on completion	Behinderung des Fertigstellungstests	Interférences avec les tests d´achèvement	Beavatkozás az átvételt megelőző üzempróbákba	Překážky provedení přejímacích zkoušek
11.8 – Contractor to search	Nachforschungen des Unternehmers	Recherches de l´entrepreneur	Vállalkozó feladata a hibák feltárásában	Zjišťovaní příčiny vady zhotovitelem
12 – Measurement and evaluation	Aufmass und Bewertung	Mesures et évaluation	Felmérés és elszámolási értékmegállapítás	Měření a oceňování

RUSSIAN	POLISH	SPANISH	PORTUGUESE	CHINESE
Претензии подрядчика	Roszczenia wykonawcy	Reclamaciones del contratista	Demandas do contratado (reivindicações do empreiteiro)	承包商的索赔
Задержка в предоставлении чертежей или даче указаний	Opóźnienie rysunków lub instrukcji	Demoras de los planos o instrucciones	Desenhos ou instruções atrasodos	拖延的图纸或指示
Право доступа на строительную площадку	Prawo dostępu do placu budowy	Derecho de acceso al lugar de las obras	Direito de entrar no canteiro de obra (de acesso ao local)	进入现场的权利
Разметка объектов	Wytyczenie	Trazado	Implantação (posicionamento)	放线
Непредвиденные геологические условия	Nieprzewidywalne warunki fizyczne	Condiciones físicas imprevisibles	Condições físicas imprevisíveis	不可预见的外界条件
Ископаемые	Wykopaliska	Fósiles	Achados arqueológicos (fósseis)	化石
Испытания	Dokonywanie prób	Pruebas	Testes	检验
Продление срока завершения работ (строительства объектов)	Przedłużenie czasu na ukończenie	Prórroga del plazo de terminación	Prolongamento do prazo para terminar (conclusão)	竣工时间的延长
Задержки, вызванные органами власти	Opóźnienia spowodowane przez władze	Demoras ocasionadas por las autoridades	Atrasos causados por autoridades	由公共当局引起的延误
Последствия приостановки работ	Konsekwencje zawieszenia	Consecuencias de la suspensión	Consequências da interrupção (suspensão)	暂停引起的后果
Приемка части объектов	Przejęcie części robót	Recepción de partes de las obras	Recepção (ocupação) de parte da obra	对部分工程的接收
Препятствие проведению контрольных испытаний по завершении строительства объектов	Przeszkoda w próbach końcowych	Interferencia con las pruebas a la terminación	Obstáculos à execução de testes finais (interferência nos testes na conclusão)	对竣工检验的干扰
Выяснение причин недостатков подрядчиком	Obowiązek poszukiwania przez wykonawcę	Búsqueda por parte del contratista (búsqueda de las causas de defectos por parte del contratista)	Verificação de defeitos pelo contratado (busca pelo empreiteiro)	承包商的调查
Измерение и оценка	Obmiary i wycena	Medición y evaluación	Medição e avaliação	计量和估价

ENGLISH	GERMAN	FRENCH	HUNGARIAN	CZECH
12.4 – Omissions	Nichtdurchführung von Arbeiten	Omissions	Mulasztások	Vypuštění práce na díle
13.2 – Value engineering	Technische Rationalisierung	Valeur ajoutée de l´ingénierie	Értékelemzés	Hodnotové inženýrství (zlepšovací návrh)
13.3 – Variation procedure	Durchführung der Leistungsänderung	Procédure de modification	Változtatási eljárás	Postup při změnách
13.7 – Adjustments for changes in legislation	Anpassungen aufgrund von Gesetzes änderungen	Ajustements pour changements dans la legislation	Jogszabályi módosulások miatti kiigazítások	Úpravy v důsledku legislativních změn
14.4 – Schedule of payments	Zahlungsplan	Calendrier des paiements	Fizetési ütemterv	Harmonogram plateb
14.8 – Delayed payment	Verspätete Zahlung	Paiement retardé	Késedelmes kifizetés	Opožděná platba
16.1 – Contractor's entitlement to suspend work	Anspruch des Unternehmers auf Suspendierung der Arbeiten	Autorisation de l´entrepreneur de suspendre les travaux	Vállalkozó joga a munka felfüggesztésére	Oprávnění zhotovitele přerušit práce
16.4 – Payment on termination	Zahlung nach Kündigung	Paiement aprés résiliation	Kifizetés felmondáskor	Platba při odstoupení
17.1 – Indemnities	Haftungsfreistellung	Indemnités	Kártérítés	Odškodnění (zproštění odpovědnosti)
17.4 – Consequences of employer's risk	Folgen des Risikos des Bestellers	Conséquences des risques du maître de l´ouvrage	A Megrendelő kockázataival járó következmények	Důsledky rizik objednatele
18.1 – General requirements for insurances	Allgemeine Anforderungen an Versicherung	Exigences generales relatives aux assurances	A biztosításokkal szembeni általános követelmények	Všeobecné požadavky na pojištění
19.4 – Consequences of force majeure	Folgen der höheren Gewalt	Conséquences de la force majeure	A Vis Maior következményei	Následky vyšší mocí
19.6 – Optional termination, payment and release	Freies Kündigungsrecht, Bezahlung und Befreiung	Résiliation optionnelle, paiement et libération	Felmondás lehetősége, kifizetés és felmentés felmentes	Dobrovolné odstoupení, platba a zánik závazku

RUSSIAN	POLISH	SPANISH	PORTUGUESE	CHINESE
Отмена работ	Pominięcia	Omisiones	Omissões (de trabalho na obra)	省略
Функционально-стоимостной анализ	Inżynieria wartości	Ingeniería de Valor	Engenharia de valor (proposta de melhoria)	价值工程
Порядок внесения изменений	Procedura zmiany	Procedimiento de variación	Procedimento de variação	变更程序
Корректировка в связи с изменениями в законодательстве	Korekty wynikające ze zmian stanu prawnego	Ajustes por cambios en la legislación	Ajustes por mudanças na legislação	法规变化引起的调整
График платежей	Wykaz płatności	Calendario de pagos	Cronograma de Pagamentos	支付计划表
Задержка оплаты	Opóźniona płatność	Retraso en los pagos	Pagamento atrasado	拖延的支付
Право подрядчика приостановить выполнение работ	Uprawnienie wykonawcy do zawieszenia pracy	Derecho del contratista a suspender los trabajos	Direito do empreiteiro (contratado) de suspender os trabalhos (obras)	承包商有权暂停工作
Оплата по расторжении контракта	Płatność przy odstąpieniu	Pago a la terminación	Pagamento na rescisão	终止时的支付
Гарантии освобождения от ответственности	Odszkodowania	Indemnizaciones (Exoneración de responsabilidades)	Indenização (liberação de responsabilidade)	保障
Последствия рисков Заказчика	Skutki zagrożeń stanowiących ryzyko zamawiającego	Consecuencias de los riesgos del contratante	Consequências dos riscos do contratante	业主的风险造成的后果
Общие требования к страхованию	Ogólne wymagania w odniesieniu do ubezpieczeń	Requisitos generales en materia de seguros	Requisitos gerais para seguros	有关保险的总体要求
Последствия обстоятельствнепреодолимой силы (форс-мажор)	Następstwa siły wyższej	Consecuencias de la fuerza mayor	Conseqüências da força maior	不可抗力引起的后果
Расторжение контракта по усмотрению, оплата и освобождение от обязательств	Odstąpienie według uznania, płatność i zwolnienie	Terminación opcional, pago y finiquito	Rescisão opcional, pagamento e quitação	可选择的终止、支付和解除履约

C.3 Dictionary – Employer's claims

ENGLISH	GERMAN	FRENCH	HUNGARIAN	CZECH
Employer's claims	Ansprüche des Bestellers	Réclamations du maître de l´ouvrage.	A megrendelő követelései	Nároky objednatele
4.19 – Electricity, water and gas	Elektrizität, Wasser und Gas	Electricité, eau et gaz	Villamosenergia-, víz- és gázellátás	Elektřina, voda a plyn
4.20 – Employer's equipment and free-issue material	Ausrüstung des Bestellers und kostenlos beigestelltes Material	Equipement du maître de l´ouvrage et matériaux librement mis à disposition	A megrendelő eszközei és a térítésmentesen rendelkezésre bocsátott anyag	Vybavení objednatele a materiál volně poskytovaný objednatelem
7.5 – Rejection	Zurückweisung	Rejet	Elutasítás	Odmítnuti
7.6 – Remedial work	Nachbesserung	Travaux de réparation	Helyreállítási munka	Opravné práce
8.6 – Rate of progress	Baufortschrittrate	Degré d´évolution	Előrehaladás üteme	Rychlost postupu
8.7 – Delay damages	Verzögerungs-schadenersatz	Dommages et intérêts de retard	Kötbér	Náhrada škody za zpoždění
9.4 – Failure to pass tests on completion	Fehlschlagen der Fertigstellungstests	Echec des tests d´achèvement	Átvételt megelőző üzempróbák eredménytelensége	Neúspěšné přejímací zkoušky
10.2 – Taking over of parts of the works	Teilabnahme	Réception de parties des travaux	A létesítmény részeinek átvétele	Převzetí části díla
11.3 – Extension of defects notification period	Verlängerung der Mängelanzeigefrist	Prolongation du délai de notification des vices	A jótállási időszak meghosszabbítása	Prodloužení záruční doby
11.4 – Failure to remedy defects	Versäumnis der Mängelbeseitigung	Echec de la suppression des vices	Hiányok pótlásának elmulasztása	Neodstranění vad
13.7 – Adjustments for changes in legislation	Anpassungen aufgrund von Gesetzes-änderungen	Ajustements pour changements dans la legislation	Jogszabályok módosulása miatti kiigazítások	Úpravy v důsledku legislativních změn
15.3 – Valuation at date of termination	Bewertung zum Zeitpunkt der Kündigung	Evaluation à la date de résiliation	Felmondás napjára történő értékbecslés	Ocenění k datu odstoupení
15.4 – Payment after termination	Zahlung nach der Kündigung	Paiement après résiliation	Kifizetés felmondást követően	Platba po odstoupení
17.1 – Indemnities	Haftungsfreistellung	Indemnités	Kártérítés	Odškodnění (zproštění odpovědnosti)

RUSSIAN	POLISH	SPANISH	PORTUGUESE	CHINESE
Претензии Заказчика	Roszczenia zamawiającego	Reclamaciones del contratante	Demandas (reivindicações) do contratante	业主的索赔
Электричество, вода и газ	Elektryczność, woda i gaz	Electricidad, agua y gas	Eletricidade, água e gás	电、水、气
Оборудование и материалы, предоставляемые Заказчиком	Sprzęt zamawiającego i materiał do wydania bezpłatnie	Equipos del contratante y materiales de libre disposición	Equipamento do contratante e material oferecido livremente pelo contratante (materiais fornecidos)	业主的设备和免费提供的材料
Отказ	Odrzucenie	Rechazo	Recusa (Rejeição)	拒收
Устранение недостатков	Prace zabezpieczające	Medidas correctivas (trabajos de reparación)	Trabalhos de reparação (reparos)	补救工作
Ход работ	Szybkość postępu pracy	Avance	Grau de evolução (ritmo de progresso)	进展速度
Возмещение заранее оцененных убытков, вызванных задержкой	Odszkodowanie umowne za opóźnienie	Indemnización por demora	Reembolso de prejuízo por atraso (danos por atraso)	误期损害赔偿费
Неудачный результат Контрольных испытаний по завершении строительства объектов	Niepowodzenie prób końcowych	Fracaso de las pruebas a la terminación	Fracasso nos testes finais (reprovação nos testes na conclusão)	未能通过竣工检验
Приемка части объектов	Przejęcie części robót	Recepción de partes de las obras	Recepção (ocupação) de parte dos trabalhos (obras)	对部分工程的接收
Продление гарантийного периода	Przedłużenie okresu zgłaszania wad	Prórroga del plazo para la notificación de defectos	Prolongamento do prazo de garantia (prorrogação do período de notificação de falhas)	缺陷通知期的延长
Неустранение недостатков	Zaniedbanie usunięcia wad	Incumplimiento en cuanto a la reparación de defectos	Não eliminação dos defeitos (falta de reparo das falhas)	未能补救缺陷
Корректировка в связи с изменениями в законодательстве	Korekty wynikające ze zmian stanu prawnego	Ajustes por cambios en la legislación	Ajustes por mudanças na legislação	法规变化引起的调整
Оценка на дату расторжения контракта	Wycena na datę odstąpienia	Valoración en la fecha de terminación	Avaliação (valoração) na data da rescisão	终止日期时的估价
Оплата после расторжения контракта	Płatność po odstąpieniu	Pagos después de la terminación	Pagamento após rescisão	终止后的支付
Гарантии освобождения от ответственности	Odszkodowania	Indemnizaciones (exoneración de responsabilidades)	Indenização (liberação de responsabilidade)	保障

ENGLISH	GERMAN	FRENCH	HUNGARIAN	CZECH
18.1 – General requirements for insurances	Allgemeine Anforderungen an Versicherung	Exigences generales relatives aux assurances	A biztosításokkal szembeni általános követelmények	Všeobecné požadavky na pojištění
18.2 – Insurance for works and contractor's equipment	Versicherungen der Arbeiten und der Ausrüstung des Unternehmers	Assurance pour les travaux et l´equipement de l´entrepreneur	A létesítmény és a vállalkozó eszközeinek biztosítása	Pojištění díla a vybavení zhotovitele

RUSSIAN	POLISH	SPANISH	PORTUGUESE	CHINESE
Общие требования к страхованию	Ogólne wymagania w odniesieniu do ubezpieczeń	Requisitos generales en materia de seguros	Requisitos gerais dos seguros	有关保险的总体要求
Страхование объектов и оборудования подрядчика	Ubezpieczenie robót i sprzętu wykonawcy	Seguro de las obras y los equipos de contratista	Seguro das obras e equipamento do empreiteiro	工程和承包商的设备的保险

Appendix D: Claim Management System under FIDIC Forms

D.1 Claim Management Team Responsibilities

Comment: This is an example of an arrangement of a Contractor's Claim Management System that can be used by employers and/or engineers with necessary adjustments. Every project is different in terms of its size, price, time, country and risk, so the number of employees must be adjusted accordingly. There should be one individual employee (or a team) dealing with the particular categories such as, for example, claim administration and quantification, design, time schedule (programme), contract interpretation, monthly statements, invoicing, insurance, subcontractors, employer's claims and mutual claims in a joint venture. Daily coordination meetings may be necessary in large projects where numerous site managers and claim managers need to share information as openly and efficiently as possible. Legal support may also be necessary in particular situations. Furthermore, it is difficult to hire professional claim managers in many countries so lawyers sometimes step into this function.

E = Employee

D.1.1 E1 – Project manager

Examples of responsibilities:

- E1 is primarily responsible for identifying all factors that have an impact on time and price during the project.
- E1 is responsible for claim management as a whole, i.e. mainly for claim identification, keeping contemporary records, coordination of the team, early warnings, analysis of claims, decisions regarding the claim notice, consultation with the engineer or the employer, notification and submission (quantification) of claims.

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E1 is responsible for documentation, quantification and calculation of the value of claims for an extension of time for completion and additional payment (for the claim submission and enforcement).
E1 is responsible for deadlines (i.e. mainly for notification and submission of claims).
E1 is responsible for proper and efficient claim management organisation and delegates responsibility for the purpose of efficient claim management.
E1 is responsible for coordination and consultation within the consortium (joint-venture).
E1 is responsible for the time schedule (programme), progress reports and monthly statements and updating as per the contract.
E1 is responsible for proper and formal correspondence (i.e. mainly for notification and submission of claims).

D.1.2 E2 – Design and time schedule (Programme)

Examples of responsibilities:

E2 is responsible for identifying all factors that have an impact on time and price related to the design and time schedule, i.e. mainly for claim identification and keeping of contemporary records.
E2 is responsible for monitoring and analysing the design works – mainly with regard to possible defects and respective claims.
E2 is responsible for the identification of the defects in the terms of reference (mainly the tender design, drawings, specifications, bill of quantities and employer requirements).
E2 is responsible for time schedule up-dating due to EOT claim notifications and submissions (quantification).
E2 is responsible for the preparation and coordination of inputs for the updated time schedule.
Based on these inputs, the site manager prepares and updates the time schedule and adjusts it according to the engineer's requirements.

D.1.3 E3 – Site manager

Examples of responsibilities:

E3 is responsible for identifying all factors that have impact on time and price during the project. Everything must be documented and contemporary evidence kept.

E3 prepares necessary materials and documents for E1 to enable proper coordination of the team, early warnings, analysis of the claims, decision of the claim notice, consultation with the engineer or employer, notification and submission (quantification) of claims.
E3 is responsible for preparation of the documents and records for claim quantification and EOT evaluation/quantification (in cooperation with E2).
E3 is responsible for timely claim notification.
E3 is responsible for preparation of the documents and records for progress reports.
E3 is responsible for the preparation of documents and records for proper formal correspondence (i.e. mainly for notification and submission of claims).

D.1.4 E4 – Contract Interpretation, Monthly Statements, Invoicing, Insurance, Subcontractors, Employer's Claims, Mutual Claims in a Joint Venture

Examples of responsibilities:

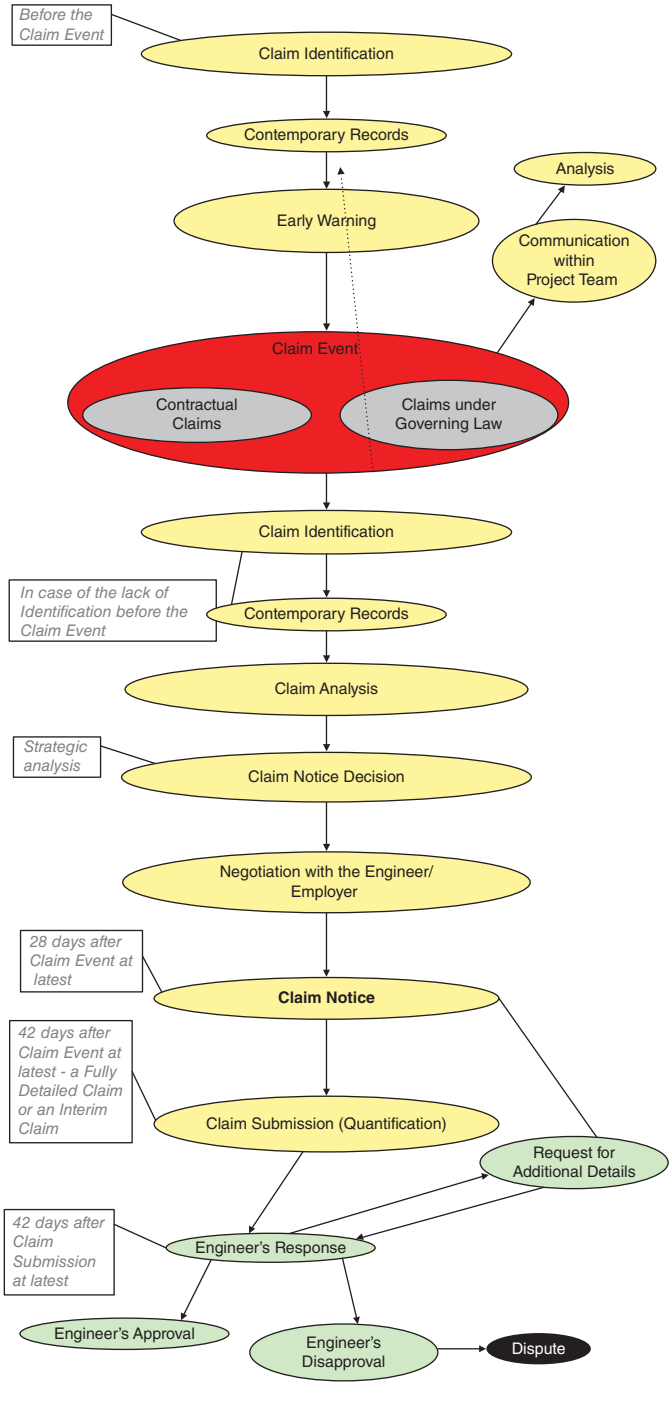
E4 is responsible for identifying all factors that have an impact on time and price related to monthly statements, invoicing, insurance and subcontractors.
E4 is responsible for claim quantification (in cooperation with E3 for E1), i.e. mainly claims for additional payment including mutual damages compensation, cost of suspension, delay, disruption, termination and the effects of variation (such as acceleration and prolongation).
E4 is responsible for contract interpretation.
E4 is responsible for claim management in terms of cost control and payments (monthly statements, invoicing, and so on).
E4 is responsible for insurance claim management.
E4 is responsible for subcontractor claim management.
E4 is responsible for employer claim management defense.
E4 is responsible for mutual claims in a joint venture.

D.1.5 E5 – Administrative support

Examples of responsibilities:

E5 is responsible for the evidence of claims and administrative support for the team.
E5 is responsible for systematic and clear evidence of letters and contemporary records.

D.2 Claim Management Processes



D.3 Table of Contractor's claims under FIDIC CONS

Clause in FIDIC CONS 20.1	Contractor's claims
1.9	Delayed drawings or instructions
2.1	Right of access to the site
4.7	Setting out
4.12	Unforeseeable physical conditions
4.24	Fossils
7.4	Testing
8.4	Extension of time for completion
8.5	Delays caused by authorities
8.9	Consequences of suspension
10.2	Taking over of parts of the works
10.3	Interference with tests on completion
11.8	Contractor to search
12	Measurement and evaluation
12.4	Omissions
13.2	Value engineering
13.3	Variation procedure
13.7	Adjustments for changes in legislation
14.4	Schedule of payments
14.8	Delayed payment
16.1	Contractor's entitlement to suspend work
16.4	Payment on termination
17.1	Indemnities
17.4	Consequences of employer's risk
18.1	General requirements for insurances
19.4	Consequences of force majeure
19.6	Optional termination, payment and release

D.4 Table of Employer's claims under FIDIC CONS

Clause in FIDIC CONS 2.5	Employer's claims
4.19	Electricity, water and gas
4.20	Employer's equipment and free-issue material
7.5	Rejection
7.6	Remedial work
8.6	Rate of progress
8.7	Delay damages
9.4	Failure to pass tests on completion
10.2	Taking over of parts of the works

Clause in FIDIC CONS 2.5	Employer's claims
11.3	Extension of defects notification period
11.4	Failure to remedy defects
13.7	Adjustments for changes in legislation
15.3	Valuation at date of termination
15.4	Payment after termination
17.1	Indemnities
18.1	General requirements for insurance
18.2	Insurance for works and contractor's equipment

Appendix E: FIDIC Forms Risk Allocation Charts

E.1 Chart No.1: Basic risk allocation alternatives in connection with unforeseeable physical conditions

Alternative	Risk allocation	Contractor's costs	Contractor's overhead	Contractor's profit
A.	Employer	Employer's risk	Employer's risk	Employer's risk
B.	Shared	Employer's risk	Employer's risk	Contractor's risk
C.	Contractor	Contractor's risk	Contractor's risk	Contractor's risk

E.2 Chart No. 2: Basic comparison of risk allocation (claims options) in FIDIC CONS/1999 Red Book, P&DB/1999 Yellow Book and EPC/1999 Silver Book

E = Employer's risk; **C** = Contractor's risk; **S** = Shared risk

Clause	Identification of risk	Red Book	Yellow Book	Silver Book
1.9 *Red Book*	Delayed Drawings or Instructions (by the Employer)	**E**	-	-
1.9 *Yellow Book*	Errors in the Employer's Requirements	-	**E**	**C**
2.1	Right of Access to the Site	**E**	**E**	**E**

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Clause	Identification of risk	Red Book	Yellow Book	Silver Book
4.7	Setting Out (of original points, lines and levels of reference)	**E**	**E**	**C**
4.12	Unforeseeable Physical Conditions	**S** Time = E Costs = E Overhead = E Profit = C	**S** Time = E Costs = E Overhead = E Profit = C	**C**
4.24	Fossils	**S** Time = E Costs = E Overhead = E Profit = C	**S** Time = E Costs = E Overhead = E Profit = C	**S** Time = E Costs = E Overhead = E Profit = C
7.4	Employer's Delay in Performing Tests	**E**	**E**	**E**
7.5	Rejection of Plant, Material or Workmanship	**C**	**C**	**C**
7.6	Remedial Work	**C**	**C**	**C**
8.4	Extension of Time for Completion	**S** Time = E Costs = C Overhead = C Profit = C	**S** Time = E Costs = C Overhead = C Profit = C	**S** Time = E Costs = C Overhead = C Profit = C
8.4	Exceptionally Adverse Climatic Conditions	**S** Time = E Costs = C Overhead = C Profit = C	**S** Time = E Costs = C Overhead = C Profit = C	**C**
8.5	Delays Caused by Authorities	**S** Time = E Costs = C Overhead = C Profit = C	**S** Time = E Costs = C Overhead = C Profit = C	**S** Time = E Costs = C Overhead = C Profit = C
8.6	Insufficient Rate of Progress	**C**	**C**	**C**
8.9	Consequences of Suspension	**S** Time = E Costs = E Overhead = E Profit = C	**S** Time = E Costs = E Overhead = E Profit = C	**S** Time = E Costs = E Overhead = E Profit = C
9.4	Failure to Pass Tests on Completion	**C**	**C**	**C**
10.2	Taking Over of Parts of the Works	**E**	**E**	**E**
10.3	Interference with Tests on Completion	**E**	**E**	**E**
11.4	Failure to Remedy Defects	**C**	**C**	**C**

Clause	Identification of risk	Red Book	Yellow Book	Silver Book
11.8	Contractor to Search for the Cause of any Defect	**S** Time = C Costs = E Overhead = E Profit = E	**S** Time = C Costs = E Overhead = E Profit = E	**S** Time = C Costs = E Overhead = E Profit = E
12.3	Evaluation	**E or C**	-	-
12.4 *Red Book*	Omission of any Work according to Variation	**S** Time = C Costs = E Overhead = E Profit = C	-	-
12.4 *Yellow & Silver Book*	Failure to Pass Tests after Completion	-	**C**	**C**
13.3	Variation Procedure	**S** Time = C Costs = E Overhead = E Profit = C	**S** Time = C Costs = E Overhead = E Profit = E	**S** Time = C Costs = E Overhead = E Profit = E
13.7	Adjustments for Changes in Legislation	**S** Time = E Costs = E Overhead = E Profit = C	**S** Time = E Costs = E Overhead = E Profit = C	**S** Time = E Costs = E Overhead = E Profit = C
13.8	Adjustments for Changes in Costs (Indexation)	**E or C**	**E or C**	**C**
14.8	Delayed Payment	**E**	**E**	**E**
15.4	Payment after Employer's Termination	**C**	**C**	**C**
16.1	Contractor's Entitlement to Suspend Work	**E**	**E**	**E**
16.4	Payment after Contractor's Termination	**E**	**E**	**E**
17.1	Indemnities	**E or C**	**E or C**	**E or C**
17.4	Consequences of Employer's Risks	**E**	**E**	**E**
19.4	Consequences of *Force Majeure*	**S** Time = E Costs = E Overhead = E Profit = C	**S** Time = E Costs = E Overhead = E Profit = C	**S** Time = E Costs = E Overhead = E Profit = C

Appendix F: Engineer's Determination Within the Ambit of the 1999 Edition of the FIDIC Contract Forms: A Case Study of Contractor's Claims in Respect of Sand and Gravel Borrow Areas

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Engineer's determination within the ambit of the 1999 edition of the FIDIC contract forms

A case study of contractor's claims in respect of sand and gravel borrow areas

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March 2014
(Originally prepared in September 2012)

F.1 Preface

Construction of various types of projects require a varied range of construction materials. For the specific case of earthfill dams and embankments, the essential construction materials include impervious materials, such as clay, and pervious materials, such as sand and gravel fills, etc.

The usual practice worldwide is to obtain or 'borrow' dam fill materials from within the vicinity of the dam such that the costs of exploitation and transport are minimized. In this context, the employers, during the pre-tender stage, undertake a detailed investigation of the types and quantities of materials available within the vicinity of the dam. The detailed investigations, along with a list of suggested borrow areas, are made available to the contractors during the pre-tender stage so that these may be taken into account by the contractors in their tender prices. The ultimate benefit of the investigations goes to the employers as the tenders are competitive as the risk of availability of materials is somewhat reduced.

This case study is in respect of earthfill materials for a medium-sized hydropower project (on two rivers named Song and Witer) where several kilometres of embankment construction were required. The required quantities of earthfill materials were in the range of several million cubic metres and therefore constituted a very large portion of the costs required to complete the hydropower dam project.

This case study frequently uses the terminology of a 'borrow' area and therefore this needs to be explained to readers who are not familiar with construction of earthfill dams. A borrow area is an area where some of the required earthfill materials are available for exploitation or excavation and use for the dam construction.

This case study is in respect of an Engineer's Determination of several claim notices issued by the Contractor with an estimated claim value of between US$60 – 80 million.

F.2 Introduction

Since the commencement of Works in May 2010, the Contractor has given several claim notices, pursuant to Sub-Clause 20.1 of the Conditions of Contract (CoC), in respect of various interlinked issues related to the exploitation of sand and gravel material from borrow areas. Some of the major issues notified by the Contractor have been:

1. The alleged insufficiency of required sand and gravel material in and around the Site areas. This includes areas designated by the Employer in the Tender Documents.
2. The quality of material available in the river bed borrow areas is alleged to be unforeseeably different and difficult to exploit and process.
3. Other contractors employed by the Employer have used some of the sand and gravel material from the designated borrow areas. The quantity involved in this respect was circa 60,000 m^3 out of a total of 7 million m^3 estimated to be available in the Employer-designated borrow areas. One of the notices given was in respect of 10,000 m^3, whereas the 2nd notice involved 50,000 m^3 of sand

and gravel material. Unforeseeable Physical Conditions, pursuant to Sub-Clause 4.12 of the CoC, were notified by the Contractor for these two cases.

4. Forced stoppages, by locals, of exploitation activities in borrow areas chosen by the Contractor in lieu of the river bed borrow areas, which were not exploited due to reason (2) (and other reasons) above.
5. Additional haulage costs, due to an increased distance, for exploitation of borrow areas chosen by the Contractor in lieu of the river bed borrow areas, which were not exploited due to reason (2) (and other reasons) above.

The claim notices were both in respect of an Extension of Time (EOT) and Additional Costs.

The foregoing matters have been extensively discussed by the Parties and the Engineer. Notwithstanding the matters of notices of claim for additional Time and Costs, the issues involved have resulted in affecting the progress of the Works. In September 2012, there is an imminent foreseeable consequence that the vast reserve of sand and gravel material in the river bed borrow areas will not be exploited and will be impounded after the scheduled second stage river diversion in the first quarter of next year (2013). This would imply a severe imbalance of sand and gravel material in the future, such that completion (or timely completion) of the Works may not be possible.

The Engineer has therefore carried out a detailed analysis of all related facts, circumstances and events and concluded on the notices issued by the Contractor. Such analysis, supporting particulars and conclusions are detailed in later sections of this report. The objective of the conclusion is to assess the Contractor's entitlement, if any, in respect of the notified events.

Once a conclusion of the Contractor's entitlement has been established, this should help both Parties (the Employer and the Contractor) to take appropriate action to avert further delays and additional costs in respect of the subject matters.

The following facts and circumstances should be taken into account in order to conclude on the matter of the Contractor's entitlement, for an Extension of Time (EOT) and/or Additional Costs, in respect of several claim notices related to sand and gravel borrow areas. Such facts, circumstances, conclusions and supporting particulars have been detailed by the Engineer in the following sections of this Determination Report (DR).

For the sake of clarity it is suggested that the review of this report should be read in the following order:

- Sections F.1 – F.4, F.6 – F.8
- Section F.5

F.3 Contractual provisions for a claim

Pursuant to Sub-Clause 20.1 of Conditions of Contract, the Contractor is required to give notice to the Engineer, with a copy to the Employer, of any event or circumstance that gives him an entitlement to any extension of the Time for Completion

or Additional Costs. The notice is to be given within twenty-eight (28) days of the event or circumstance giving rise to the entitlement first arose.

Additionally, within forty-two (42) days of the event or circumstance giving rise to when the entitlement first arose, the Contractor is to send a fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/or additional payment claimed. The fully detailed claim should have the details of the time and the grounds upon which the claim is based.

In the event of a failure by the Contractor to comply with the condition precedent for a notice (or no claim submission at all), the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Employer shall be discharged from all liability in connection with the claim.

The foregoing explanation is in strict compliance with the Contract Conditions. Notwithstanding the contractual provisions, the Engineer will in any case carry out assessments and Determinations based on the following two separate premises:

1. Strictly under the provisions of the Contract.
2. Setting aside the strict requirements of the Contract (such as time-bar and sufficiency of fully detailed claim, etc.).

F.4 Compliance with the contractual provisions

As detailed in the previous sections of this report, the Contractor has given several claim notices pursuant to Sub-Clause 20.1 of the CoC. These notices started being given more than two years back in June 2010 and recent notices were given in early July 2012.

The Engineer notes that while there have been many claim notices given by the Contractor, these have never been followed-up by the submission, pursuant to Sub-Clause 20.1 of the CoC, of a 'fully detailed claim' related to the respective claim notices. The Engineer acknowledges the volume of letters exchanged on these matters, but the requisite specific Sub-Clause 20.1 'fully detailed claims' have never been submitted by the Contractor.

The Engineer is therefore unable to carry out a Determination (there is nothing to Determine) if there is no fully detailed claim submitted by the Contractor. Therefore (please see previous Section F.11.3 of this report) owing to the Contractor's failure to follow the specified procedures and failure to provide substantiation of his claim notices, the Time for Completion cannot be extended, the Contractor cannot be entitled to additional payment, and the Employer is considered discharged from all liability in connection with such claim notices.

Notwithstanding, the Contractor has no entitlement due to the foregoing reasons, the Engineer has carried out a detailed assessment and Determination (see remaining sections of this report) in order to conclude the allocation of liability in respect the submitted claim notices related to sand and gravel borrow areas and materials.

Although never quantified or claimed by the Contractor, the Engineer estimates that the value of the claim is in the range of US$60 – 80 million.

F.5 Consultations with the employer and the contractor

A prerequisite for a Sub-Clause 3.5 Determination of the Contractor's claims by the Engineer is that both the Parties (the Employer and the Contractor) should be consulted by the Engineer such that an agreement on the claim matters may be reached. Provided an agreement is not achieved, the Engineer shall carry out a Determination of the Contractor's claim (or claim notices, as the case may be).

The Engineer has had the opportunity to consult the preliminary assessment of the subject matters with the Employer. In conclusion, the Employer's views have been incorporated herein.

F.5.1 Engineer's Preliminary Assessment Report (AR)

Meanwhile, on August 23, 2012, the Engineer issued his preliminary Assessment Report (AR) on the subject matters to the Contractor. The Engineer's aim was:

- First, to try to reach an agreement with the Contractor on the conclusions of the AR.
- In the event of no agreement, the Engineer intended to issue a Determination after taking account of the Contractor's comments, if any.

Accordingly, the Engineer, in the AR, had requested the Contractor to respond to the assessment at the earliest and to agree to the contents of this report. Alternatively the Contractor's comments were requested at the earliest. A period of two weeks was considered to be reasonable and thus permitted for a response from the Contractor. Provided the Contractor required the two-week period to be extended, a timely request was required from the Contractor.

The Contractor was further advised that in the event of no response from the Contractor over the permitted two weeks (or extended period, if applicable), the Engineer would issue the Sub-Clause 3.5 Determination as the Contractor has been given the opportunity to agree/comment on this assessment.

Following receipt of the AR, the Contractor replied with his comments/rebuttal within the period of two weeks.

The next two sub-sections (F.5.2 and F.5.3) of this Determination deal with the Contractor's comments/rebuttal to the AR.

F.5.2 Contractor's Rebuttal

The Contractor wrote to the Engineer on September 4, 2012 and issued his detailed comments, critique and rebuttals to the Engineer's Preliminary Assessment in respect of the Subject claims. This response from the Contractor is referred to as the Contractor's Rebuttal (CR) throughout the rest of this Engineer's Determination Report (DR). The Engineer's responses/clarifications to the CR are detailed in the next sub-section F.5.3 of this DR.

F.5.3 Engineer's Rejoinder (EJ) to the Contractor's Rebuttal (CR)

The Contractor in the Contractor's Rebuttal (CR) [Contractor's letter 3117 dated September 4, 2012] has made certain statements, which were already dealt by the Engineer in his Assessment Report (AR). The Engineer, therefore, in this Rejoinder, will only respond to statements which are seemingly based on new evidence and/or substantiation. Specific responses to some of the matters, raised by the Contractor, follow:

1. **Contractor has alleged that the Engineer has failed to assess the adverse impacts caused by Employer's excavation or exploitation of handed-over borrow areas SG1_B and SG2_B.**

The Contractor, in the CR, has consistently and persistently made reference to the material used by other contractors of the Employer. The Contractor has alleged that these circumstances have been the cause of a severe shortfall of sand and gravel materials. The alleged basis of this claim is:

- Borrow Area SG2_B – Quantity allegedly consumed by other contractors of the Employer = 105,863 m^3
- Borrow Area SG1_B – Quantity allegedly consumed by other contractors of the Employer = 742,000 m^3

The Engineer responds to these allegations in the following paragraphs:

In the case of SG2_B, the quantity of 105,863 m^3 has been quoted by the Contractor with reference to his letter 786 dated January 25, 2012. A review of this letter will show that the quantity of 105,863 m^3 has been based on the result of a joint survey of the borrow area SG2_B carried out on January 19, 2012. This is correct and the Engineer agrees that the result of this joint survey is that as of January 19, 2012 (date of joint survey), 105,863 m^3 of sand and gravel material had been exploited from this borrow area.

The Engineer meanwhile points out that the Contractor overlooked the fact that the surveyed quantity was a net total of the exploitation carried out by other contractors of the Employer and *the Contractor himself***.**

Yes, this is correct, the Contractor had himself used part of the material exploited from borrow area SG2_B prior to the joint survey of January 19, 2012. As evidence, the Engineer makes reference to the Contractor's own Monthly Progress Reports (for example, for October, November and December 2011) which confirm that the Contractor has exploited part of the material which he now alleges has been consumed by the Employer and his other contractors.

The Engineer basically notes that the claimed figure has been overstated by the Contractor. Whether this is intentional or inadvertent, the Engineer does not want to comment on. The Engineer will give the benefit of doubt to the Contractor and will assume that the report of 105,863 m^3 being used by the Contractor was inadvertent and the Contractor merely forgot (or did not research all circumstances as required by the Contract) to verify and report his own use of sand and gravel material prior to January 19, 2012 from the borrow area SG2_B.

Further exploitation of sand and gravel material from borrow area SG2_B by the Contractor was admitted by the Contractor on July 2, 2011. The Contractor confirmed that:

> As a matter of fact, the Contractor has, during the past period of time, been using the sand/gravel materials from SG2-B for cofferdam embankment in Spillway.

For clarity, based on the date of Contractor's letter, the sand and gravel material was exploited by the Contractor prior to the joint survey of January 19, 2012.

Based on such evidence (evidence which was ignored by the Contractor), it is clear that the bulk of material used from this borrow area was in fact used by the Contractor himself.

The bottom line is that the alleged figure allegedly claimed by the Contractor to have been used by the Employer is incorrect. In order to get the correct figure, the Engineer has requested the Employer verify his records. The Employer has checked and it seems the figure of 20 – 30,000 m^3 is close to the actual usage. The actual figure may be much less. For the purpose of this verification, the Engineer will assume the figure was as much as 50,000 m^3 (as this figure was quoted in previous correspondence) used by the Employer (or his other contractors).

In spite of the use by the Contractor (of whatever quantity) and in spite of minor usage by the Employer, the reserve for this borrow area was investigated and verified by the Contractor and it was reported on December 9, 2011 (which is more than 17 months later) that the reserve for this borrow area (SG2_B) was 505,750 m^3, which is much more than the original estimate of 150,000 m^3 at Tender.

Therefore, whatever exploitation was carried out by the Employer (or his other contractors) and the Contractor, the estimated reserve for this area was confirmed by the Contractor to be more than three times greater than the original estimate (150,000 m^3) provided by the Employer at the time of Tender. This estimate, the Engineer repeats, was after the Employer (or his other contractors) had already exploited the quantity of 50,000 m^3 (and not 105,863 m^3 as claimed by the Contractor).

In the case of SG1_B. The quantity allegedly exploited by the Employer (and his other contractors) for SG1_B is 742,000 m^3. This figure is outrageously incorrect. The maximum possible quantity cannot exceed the estimated reserve for this borrow area, which was only 165,000 m^3. Therefore, this figure seems baseless and may just be the result of an inadvertent typing error. This is confirmed by the Contractor quoting this figure, sometimes as 742,000 m^3 and in other places only 42,000 m^3.

Again the quantity of sand and gravel material allegedly exploited by the Employer (or his other contractors) is in doubt yet once again. No substantiation of this large figure has been provided by the Contractor and is therefore disapproved.

The quantities claimed by the Contractor have no basis and the substantiation thereof does not exist, as none has been provided to the Engineer. The figures mentioned in the Engineer's letter of August 14, 2010 (5,100 m^3) will therefore be taken as correct. In the same letter, the Engineer pointed out that the Contractor had already carried out unaccounted exploitation of this borrow area and that this was carried out due to the Contractor's own use in temporary works.

The Contractor has failed to mention his own usage in this borrow area. The Contractor's letter of October 27, 2010 pointed out that: 'Contractors have taken materials from SG1_B since handover.' In spite of the use by Contractor (of whatever quantity) and in spite of minor usage by Employer, the reserve for this borrow area was investigated and verified by the Contractor and it was reported on December 9, 2011 (which is more than 14 months later) that the reserve for this borrow area (SG1E_B) was 247,982, which is much more than the original estimate at Tender (see Contractor's letter for an original estimate of this borrow area).

Therefore whatever exploitation was carried out by the Employer and the Contractor, the estimated reserve for this area was confirmed by the Contractor to be more than 50% greater than the original estimate (165,000 m^3) as confirmed by the Contractor's letter at 56 of December 9, 2011. This estimate, the Engineer repeats, was after the Employer (or his other contractors) had already exploited the quantity of 5,100 m^3 (and not 742,000 m^3 as claimed by the Contractor).

The Engineer also takes the opportunity to point out the following Contract Provision, which is relevant to the issue under discussion. Sub-Clause 2.1 of the GCC states that:

> The Employer shall give the Contractor right of access to, and possession of, all parts of the Site within the time (or times) stated in the Appendix to Tender. *The right and possession may not be exclusive to the Contractor*.
>
> [Emphasis added]

Based on the foregoing extract from the Contract, it is clearly expected that the borrow areas may have to be shared with other contractors. This is exactly what happened in the two cases (SG1_B and SG2_B). The Contractor should have taken this into account prior to giving a notice of unforeseen conditions (Sub-Clause 4.12).

In this respect, the Employer's statement of July 1, 2010 is relevant to point out:

> The estimated volume of material of the borrow area (SG2_B) shown in the Tender Drawings was calculated considering the volume of material needed for the completion of the mentioned road (i.e. the given volume is the volume after completion of the work).

This statement was proven to be correct by the Contractor himself on December 9, 2011, when he pointed out the results of his investigation of the various borrow areas and confirmed that the reserves in the tender designated borrow areas was much more than the estimate given by the Employer at the time of Tender.

Based on the foregoing considerations, discussions and facts, the Engineer does not consider Sub-Clause 4.12 (unforeseeability) can be applied in the case of the alleged events related to exploitation of miniscule quantities of sand and gravel materials by the Employer (and his other contractors).

It is also worthwhile mentioning the Contractor's statement of October 27, 2010:

> In addition, the Engineer is hereby reminded that the deficit of quantity taken by the Employer without any prior notice or prior agreement from SG1_B and SG2_B which forced Contractor to explore farther borrow areas (more than 3km) entitle the Contractor to recover the additional cost and delay.

The Contractor was forced to explore farther borrow areas not because of the miniscule quantity of sand and gravel material (55,100 m^3 out of a total of 7 million m^3) used by other contractors working for the Employer.

In conclusion, the Engineer notes that the Contractor, in respect of the quantities of sand and gravel material used by the Employer, feels that the Engineer has been unfair in his assessment of this matter. The Contractor alleges that:

> Then the Engineer, deemed as the Employer's Personnel, did not provide an assessment of fairness based on Contract as his fairness in dealing contractual issues is seriously questioned and in doubt to the extent that the Engineer seems deliberately or reluctantly avoid to recognize the fact of Employer's taking materials from handed over borrow areas.
>
> Therefore, as the Engineer did selectively assess the issue of sand and gravel included in the Contractor's claim, then the Contractor considers it necessary to remind the Engineer of his contractual obligation and of the history of the adverse impacts due to the Employer's exploitation of sand and gravel from the borrow areas already handed-over by the Employer after Commencement Date, which is one of the major causes worsening the material shortage.

Based on the earlier paragraphs on this matter, the Engineer points out that:

- The Contractor has ignored or overlooked some of the key Contract Provisions, such as Sub-Clause 2.1 of the GCC.
- The overall balance of sand and gravel borrow areas, as designated in the Contract, was much more than foreseen in the Tender. This was based on Contractor's own estimates provided to the Engineer on December 9, 2011.
- The Contractor (the Engineer does not want to contend if this was deliberate or unintentional) has quoted figures without any substance and as a result has ended in creating a hype; hype that he has greatly suffered due to a miniscule quantity of sand and gravel material used by the Employer, who was very much entitled under the Contract to do so.
- The Contractor has overlooked his own usage of material.

The Engineer therefore points out that the Engineer has been very fair in his assessment and consequent Determination of the Contractor's alleged claim notices. The Engineer on the other hand considers that the Contractor has not been fair to the Employer in not taking seriously the matter of exploitation of the vast reserve of river bed borrow areas. The Contractor has also not been fair in his claims as unsubstantiated figures have been used by him.

2. **Contractor has alleged that the Engineer has failed to address the Contractor's warning in his Tender Method Statement (TMS) in respect of shortage of sand and gravel material in respect of its need for the Permanent Works.**

The Engineer acknowledges that the Contractor's Tender Method Statement (TMS) did point out that the estimated reserves of the tender designated borrow areas could fall short of the requirements of sand and gravel material as foreseen for the Permanent Works.

The short fall, after taking account of the estimated reserve of Song river bed borrow area, was calculated by the Contractor to be 668,000 m^3.

The Engineer points out that the shorfall should have alerted the Contractor to the possibility and as a result should have acted more diligently and should have started exploitation of the biggest estimated reserve of sand and gravel materials, the river bed. The Contractor's actions have been contrary to this logic and as of today, more than two years into the Contract, the Contractor has not seriously attempted to explore or exploit this major reserve.

The Engineer points out the following extract from Tender Document Vol. 6/7 – Geology:

> The volumes for river beds gravels were calculated on the basis of the geological sections in the axis of the dams. The square area was measured on this section and the length of application has been chosen as 1.3 km. *Thus it may be easy to increase the available volumes by increasing this length*.
>
> [Emphasis added]

The Tender Documents thus pointed out that in the event of a short fall of sand and gravel material, the river bed borrow areas could be further extended, as needed.

The Contractor did take this advice into account in his TMS. The Contractor's proposal, as detailed in the TMS, to alleviate the expected sand and gravel material shortfall, was to 'extend the excavation limit of river shoal, or [as a second choice] explore new borrow area'**.** Thus the Contractor undertook in his Tender to give priority to extend the river bed borrow area (the most logical choice). The Contractor, on the contrary, did not even explore the original estimated 2,000,000 m^3 reserve in the river bed.

This is a serious deviation from his tender intentions; intentions which are the basis of his costing and the final Accepted Contract Amount. A deviation which has unjustly enriched the Contractor, all at the expense of the Employer.

3. **Contractor considers that the words 'designated' and 'non-designated' used by the Engineer in his Assessment Report (AR) have been derived out of the Engineer's imagination.**

The Contractor in the Contractor's Rebuttal (CR) complains that:

> These two words are contractually unsupported *without any reference in Contract*, and Contractor will consider this wording is purely imagination or devised words by the Engineer through his own *twisted interpretation of Contract*.
>
> [Emphasis added]

The Contractor, after a long commentary on this matter, concludes that:

> Consequently, the Engineer's wording ('designated' and 'non-designated') is misleadingly used, without any contractual basis, which just represents the Engineer's wrong interpretation of Contract.

The Engineer's response to the Contractor's statements and accusations is as follows:

- Volume 7/7 of the Tender Documents – There are numerous instances where the word 'Designated' has been used.
- Sub-Clause 1.4.4 of Section 23sd of TS – The words 'Designated Source' may be noted.
- Sub-Clause 1.1.7 of Section 23sd of TS – Few instances where the word 'Designated' has been used.
- Numerous other instances in the TS where the word 'Designated' has been used.
- Sub-Clause 1.1.12 of Section 23sd of TS – the word 'Designated' has been used.
- Final conclusive reference is made to the Contractor's own TMS, wherein it was confirmed by the Contractor that:

> The total available quantity of SG1-B, SG2-B and BR1-B sand-gravel borrow area and river bank with *designated* excavation limit is 2,655,000 m^3.
>
> [Emphasis added]

The Engineer therefore corrects the Contractor in this instance as well and provides evidence that the Engineer's contractual interpretation is not 'twisted' (as alleged by the Contractor) or his wording is not 'misleading' (also alleged by the Contractor).

Notwithstanding the foregoing explanation and clarification, the Engineer points out the Engineer's statement in his AR: 'Based on earlier Sections of this report, it is concluded that the Song and Witer river bed borrow areas were specified (or designated) in the Contract.' Thus it was clearly explained to the Contractor that the word 'designated' and specified may have the same meaning or implication.

4. **Contractor considers the use of riverbed borrow areas is not contractually binding.**

The Engineer's response to the Contractor's opinion is as follows:

The Engineer has not anywhere stated that it is a 'MUST'. But the Engineer, in several places in the AR has reasoned why it was prudent to use such areas. It is correctly noted by the Contractor that the borrow areas were recommended, recommended to be the first choice for the Contractor.

The Engineer agrees with the Contractor that in principle it may not be contractually binding on the Contractor to use the river bed borrow areas. The Contractor is at liberty to decide and choose alternative areas of his own choice. Meanwhile the following must be taken into account in order to conclude on this matter:

- Sub-Clause 1.3.4 of Section 23sd of TS (Vol. 2):

> Filters 3a shall consist of sand and gravels derived from Upper Song river borrow area as shown on the Drawings.

- Sub-Clause 1.3.4 of Section 23sd of TS (Vol. 2):

> Drain 3b shall consist of sand and gravels derived from Upper Song river borrow area as shown on the Drawings.

- Sub-Clause 1.3.4 of Section 23sd of Specifications (Vol. 2):

  > Dam downstream top material 5 shall consist of crushed rock from Upper Song river as shown on the Drawings.

- Sub-Clause 1.3.5 of Section 23sd of Specifications (Vol. 2):

  > The construction of the sand and gravel fill zones within the dam embankments shall consist of raw gravel materials derived from Witer and Song Rivers.
  >
  > …
  >
  > Unclassified sand and gravel 2a shall consist of raw gravels material derived from Witer and Song rivers as shown on the Drawings.
  >
  > …
  >
  > Classified sand and gravel 2b shall consist of raw gravels material derived from Witer and Song rivers as shown on the Drawings.

- The repeated stipulations in the Technical Specifications (TS), for the use of river bed borrow areas, are an indication of the importance of this matter contractually and why this may be considered binding.
- The repeated instruction in the TS by way of;

  > ***SHALL CONSIST*** … ***SONG RIVER BORROW AREA*** …
  >
  > [Emphasis added]

  is the instruction advising the Contractor that the use of the river bed sand and gravel borrow areas is binding.
- River bed borrow areas have no contractual binding on the Contractor. This is incorrect as:
  - TS sections specify these borrow areas.
  - Contractor's tender method statement is binding as this is the basis of the Accepted Contract Amount (ACA).
  - Being the single most largest source indicated in Tender, it was the most logical way to proceed. Saving time and costs of exploration.
  - Sub-Clause 1.1.1 of Section 23sd of TS lists the designated borrow areas to be the first choice.

  The river bed borrow areas are therefore binding by conclusion of the joint and cumulative review of the Contract Provisions and the reality on Site after the Contractor had failed to earmark sand and gravel material reserves in non-designated borrow areas. Having failed to make available the required quantities of sand and gravel, it became binding on the Contractor to exploit his Tender-intended areas in the river bed. In his continued ignorance of this key borrow area, the Contractor has increased the Employer's liabilities and in return made a saving of the exploitation costs under water.

  All of the above-mentioned reasons thus result in only one conclusion; the conclusion that the Contractor should go to the river bed for the exploitation of

the sand and gravel materials. Alternatively it became binding on the Contractor to carry out his obligations as defined in his TMS.

- TS 1.1.6 of 23sd:

> The Contractor shall be fully responsible for the provision of the materials as specified and required for the Works in accordance with the Contract. All quarries and borrow pit areas have to be selected by the Contractor.

The Employer and the Engineer fully respect the Contractor's freedom to choose, to choose the path to a successful solution. The Contractor has been given the liberty to explore whatever he wants. He has been handed over what he has requested, save for areas for which there was a reason to be refused. The end result, as of September 2012, is that there is in reality a severe shortage of sand and gravel materials. The shortage has been evident for a long time now and the Contractor has been repeatedly advised, by the Employer and the Engineer, to meet the short fall by exploiting the river bed borrow areas.

The incorrect choices made by the Contractor and his persistent refusal to go to the river beds have been the reason for the severe short fall. These circumstances lead to the situation where exploitation of the river beds is more and more binding on the Contractor as further time elapses.

In this respect the following extract from Sub-Clause 6.6.2 of Vol. 6/7 (Geology) of the Tender Documents is important to point out:

> In conclusion, *river bed sand and gravel are to be used in priority*, with a possibility of inland material reserve provided that a specific treatment is carried out (screening, recomposing).
>
> [Emphasis added]

The Tender Documents thus assigned an undisputable priority to the river bed borrow areas. The Contractor undertook to respect this priority in his Tender (see the Contractor's TMS). The cumulative outcome of these two circumstances is that the river bed borrow areas are binding on the Contractor. Yet at the end of the day, zero priority was assigned to this important and vast source of sand and gravel materials.

The Contractor is thus considered fully culpable for his actions (or inactions, as the case may be) resulting in increasing the Employer's liabilities and possibly resulting in delaying the Completion of the Works.

5. **Contractor's interpretation of Sub-Clause 1.1.1 of Section 23sd of TS.**

The Contractor's interpretation of the stated stipulation is that the Employer:

> requests the Contractor to conduct the investigations extensively no matter if it is recommended to use the borrow areas by the Employer or newly identified borrow areas or source.

Elsewhere in the Contract, and in many instances, the Contract does stipulate that the Contractor may carry out investigations as per his choice. The Engineer would

assume this to imply that the Contractor is at liberty to use designated borrow areas or alternatively, to investigate newly identified borrow areas or source.

Meanwhile the specific interpretation of the subject Sub-Clause is different and this stipulates the following.

There are three choices of borrow areas in Sub-Paragraph B of this Sub-Clause.

- Choice 1 – The exact borrow areas within this definition are detailed in Table 6.2 of Sub-Clause 6.3.4.1 of Volume 6/7 (Geology) of the Tender Documents. These borrow areas are copied below for the ease of reference:

  Location Area previously investigated

  Badi North, Badi South, Sime right bank, Song (Badi) left bank, Kubur, Fitan, Zakar, Song River bed (Downstream), Witer River bed (Upstream)

  Area investigated in 2007

  SG2_B, SG1_B, SG2_B, SU1_B, SU2_B, Song, Witer

- Choice 2 – '*All areas requiring complementary investigations*': Merely by virtue of this definition, this would imply the borrow areas previously investigated by the Employer. This implication is based on the word 'complementary'. To complement a borrow area, this must be one of those which has already been investigated. This would essentially re-confirm the areas already detailed in the first choice.
- Choice 3 – This is straightforward. Excavation material from the Permanent Works.

Meanwhile, Sub-Paragraph D of this Sub-Clause stipulates as follows:

- The preliminary investigations should start with the three choices noted above.
- The preliminary investigations should be limited to '*borrow area from Tender Design*', and
- '*investigate borrow area just before the construction*'.

It was explained the preference for these stipulations was '*since the geotechnical specification and minimum volume are respected*'.

In summary, the Contractor's interpretation may not be considered tenable as the emphasis of the subject Sub-Clause is that preliminary investigations should commence at previously identified or investigated borrow areas and not '*new identified borrow areas*'.

Based on the joint reading of the subject Sub-Clause and other Contract Provisions, it can be concluded that the Contractor was required to start investigation (and exploitation) of the borrow areas already identified and only in the event of insufficiency, was the Contractor expected to start investigations in new areas.

The Contractor, as per his interpretation of the subject Sub-Clause, did exactly the opposite. He chose to go into unidentified territories rather than the known areas. In fact, more than two years after the Contract Commencement, the Contractor has

not even attempted to properly investigate and exploit the biggest reserves identified in the Tender Documents and these areas are binding, as these have been assigned the first priority as per the Contract. The Contractor has thus acted in a manner which is contrary to the requirements of the Contract and has resulted in creating a major short fall of sand and gravel material.

6. **Contractor's assessment of reserve Quantity of BR2_B.**

The Contractor points out that the Tender Drawings 'boast' a quantity of 340,000 m^3 for the borrow area BR2_B. The Contractor alleges that in reality the estimated reserve is only 50,000 m^3.

The Engineer once again makes reference to the Contractor's letter 786 dated December 9, 2011, wherein the Contractor notes that:

- The Tender estimate for the subject borrow area was 150,000 m^3.
- The actual reserve, based on Contractor's own investigations, was found to be 223,489 m^3

The Contractor, thus, once again has mixed up his figures and quoted incorrect figures with the consequent effects thereof. The Engineer will yet once again give the benefit of doubt to the Contractor and assume the error reporting was merely inadvertent or a typing error.

Notwithstanding the foregoing, the Engineer makes note of the same reference letter wherein the Contractor has confirmed that the overall sand and gravel material balance had improved, based on a comparison of the Tender estimates and the actual quantities foreseen after investigations by the Contractor. Any minor variation in quantity is therefore not the reason for the material imbalance. The imbalance is merely because the Contractor has failed to exploit the biggest reserves in the river bed. These reserves were the Contractor's own preferred choice in his Tender submission and thus included in his pricing or the Accepted Contract Amount.

7. **Forced Stoppages by Third Parties**

The Contractor argues that the local villagers' interruptions at the borrow areas have been a major cause of delay and the worsening of sand and gravel material shortage.

The Contractor contends that the third party interruptions were instigated due to the Employer's failure to have acquired the 242 km^2 area of the intended dam reservoir right from the time of Commencement of the Works.

The Contractor additionally contends that the Employer, as required by Sub-Clause 1.1.3 of the GCC, should have obtained the planning, zoning … for the Permanent Works.

The Engineer does not disagree with the definition of Site, as contended by the Contractor. The Engineer also does not disagree that the Employer, pursuant to Sub-Clause 1.13 of the GCC, should have obtained all the necessary permissions related to the Permanent Works.

The Engineer points out that the requirements of Sub-Clause 1.13 of the GCC were respected by the Employer and that all necessary permissions related to the

Permanent Works (such as the Spillways, Power House, etc.) were timely arranged by the Employer. Thus, the Employer has fulfilled his obligations in respect of the Permanent Works.

The Contractor's argument about acquisition of the complete Site by the Employer from the Contract Commencement is not tenable as this conflicts with Sub-Clause 2.1 of the GCC where it is stipulated that:

> the Employer shall give the Contractor right of access to, and possession of, the Site within such times as may be required to enable the Contractor to proceed in accordance with the programme submitted under Sub-Clause 8.3.

The Contractor's programme had scheduled the Impounding in the Reservoir area to commence in August 2014. Therefore, the acquisition of the complete reservoir area by the Employer should be completed by August 2014.

Based on the foregoing, the Contractor's contentions are incorrect in respect of Sub-Clauses 1.13 and 2.1 of the GCC.

In spite of the requirements set out in the Contractor's programme (August 2014), the Employer has had to make serious efforts and make a cash injection of reserves to ensure the much earlier acquisition of some of the areas required by the Contractor as borrow areas.

8. **Contractor's own culpabilities responsible for third party stoppages**

The Engineer has pointed out elsewhere within this Determination Report that the Contractor has been responsible for instigating third party stoppages. In this context, the Engineer once again makes reference to Sub-Clause 2.1 of the GCC, which also stipulates that:

> However, if and to the extent that the Employer's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time, Cost or profit.

Thus stoppages instigated due to Contractor defaults may not be considered the Employer's liabilities. Some examples of such defaults have been:

- The Contractor has gone into non-designated areas which were not fully cleared of locals or were not far away (as required by volume 6 of the Contract) from villages and the population. This resulted in interference by locals in the vicinity complaining and demanding dust suppression and noise reduction.
- The Engineer considers that the Contractor should have taken appropriate precautions to protect against nuisance elements such as dust and noise in the vicinity of the borrow areas. The Contractor had agreed to abide by the Provisions stipulated in the Contract to avoid such nuisance to the community. The Contract provisions stipulate restrictions in respect of minimum distance of work areas and the local villages. Additional stipulations specify dust suppression, noise abatement and the like.

- The Engineer, therefore, considers the Contractor fully responsible for such events as he should have complied with the relevant provisions of the Contract to avoid such incidents.
- Again it is important to point out that most of the issues involving trespassing by local residents were within the non-designated borrow areas, which were not scheduled to have been made available to the Contractor prior to the commencement of the dam impounding at the end of the Project. Thus the root cause of not exploiting the river bed borrow areas was responsible for the Contractor having to go into areas not foreseen for acquisition by the Employer till the end of the Project.
- The Engineer appreciates that the resettlement (from the future Reservoir areas) of the local populace had to be undertaken some day. However, this was not any time soon and the Employer had accordingly worked out a long-term plan with the respective government authorities. To bring forward such plans by several years meant a lot of effort and Additional Costs. Additional Costs which would not be required to have been incurred by the Employer.
- As an example, the Engineer points out the Contractor's contention that the third party stoppage in early August 2012 in the borrow area SG12_B was out of his control. The Engineer's investigation on this matter is that the Contractor did not have proper demarcation of boundaries, which were handed over to the Contractor. The Contractor due to this omission, or otherwise, was working in areas not handed over to him by the Employer. In summary, it was the Contractor's own default which was the cause of this disturbance in borrow area SG12_B.
- There were other instances where the Contractor did not respect the boundaries of the handed over areas and has used areas outside the limits of handover for either exploitation or for use as stockpiles.
- Notwithstanding that the Contractor's own culpabilities have been the cause of disturbances in some of the borrow areas, the Engineer points out that part of the JV of the Contractor has experienced such disruptions in other projects within the country in recent years. Also part of the JV has been involved in other projects around the world where such occurrences are common. Thus disruptions of the Works by locals should therefore be considered a foreseeable event for the Contractor. The events notified by the Contractor are thus foreseeable and do not fall within the ambit of Sub-Clause 4.12 of the GCC.
- Finally, it is important to point out that in the absence of a fully detailed claim for such events, it is impossible to be able to assess the actual impact thereof on the progress of borrow areas exploitation. The Engineer has relied on information from his own records and those verified by the Employer. In summary, the Engineer notes that the cumulative impact of the notified third party stoppages was minimal. Thus the Contractor's contention that such events have been the cause of major delays and disruption is not accurate and seems to be overstated (once again possibly inadvertently) by the Contractor.

9. **Despite having failed to submit a fully detailed claim, the Contractor considers he is still entitled to additional Time and Costs. Evaluation of entitlement in respect of no particulars has been requested by the Contractor.**

The Engineer notes that while there have been many claim notices given by the Contractor, these have never been followed up by the submission, pursuant to Sub-Clause 20.1 of the CoC, of a 'fully detailed claim' related to the respective claim notices. The Engineer acknowledges the volume of letters exchanged on these matters, but the requisite specific Sub-Clause 20.1 'fully detailed claims' have never been submitted by the Contractor.

The Engineer is therefore unable to carry out a Determination (there is nothing to Determine) if there is no fully detailed claim submitted by the Contractor. Therefore (please see previous Sections 3 and 4 of this report) owing to the Contractor's failure to follow the specified procedures and failure to provide substantiation of his claim notices, the Time for Completion cannot be extended, the Contractor cannot be entitled to additional payment, and the Employer is thus discharged from all liability in connection with such claim notices.

Evaluation of the Contractor's entitlement cannot be based on periods, figures and amounts, which have not been claimed or which do not exist on record.

10. **The Contractor avers that the Engineer's Assessment Report lacks contractual basis.**

The Engineer notes that specifics addressed by the Contractor within this allegation have all been dealt by the Engineer in this Rejoinder and that the Contractor's allegation is without basis and without substantiation.

11. **The Contractor, in his CR and earlier notices, has claimed the payment for the over-haulage of sand and gravel material. This claim is pursuant to Sub-Clause 3.12 of Section 0234 of the TS.**

In principle, the Contractor has no entitlement whatsoever in respect of any additional costs occasioned due to the circumstances, as discussed in this Determination, which has led to a severe shortage of sand and gravel material for the Works on Site.

Meanwhile, the application of the Sub-Clause quoted by the Contractor will only apply in the event that the borrow areas within the permissible 3km distance are exhausted or proven to be unsuitable. This has not been the case and therefore the Contractor's claim for payment of over-haulage has no merit and no payment is due pursuant to the subject Sub-Clause.

12. **Engineer's Conclusions in respect of Engineer's Rejoinder to Contractor's Rebuttal (CR).**

The Engineer notes that there were several conclusions in the Engineer's Assessment Report (AR) [letter 7865 of 23 Aug. 2012], which have not been contested by the Contractor. The Engineer therefore considers such matters to be agreed facts for the purpose of this Determination and otherwise. Some of the facts or matters which fall within the category of being agreed are;

- Costs of exploitation in river bed are included in the Contractor's Accepted Contract Amount (ACA).

- No justification why special equipment for river bed exploitation was never mobilized by the Contractor.
- Official Reasons for not exploiting river bed, as pointed out by the Engineer in his AR, have not been contested.

In conclusion, the Engineer considers the CR is merely a failed attempt by the Contractor to justify his failure to exploit river bed borrow areas; a failure which has no justification under the Contract and in reality as experienced on Site.

The Engineer's Assessment Report and this rejoinder to the Contractor's Rebuttal, jointly and cumulatively, have addressed all matters of relevance and in conclusion only the Engineer re-affirms that the conclusions of this Engineer's Determination (and the previously issued Assessment Report) are sound and reasonable and fair to both Parties to the Contract.

F.6 Contractor's original intent

In order to assess the Contractor's entitlement, if any, in respect of the sand and gravel material borrow areas claims, it is important to understand the Contractor's original intent as per his Tender and as per the costs included within the Contractor's Accepted Contract Amount (ACA). Such an assessment is best carried out by way of going through, chronologically, the various stages of the pre-Contract award period.

F.6.1 Stage 1 – Information and stipulations in the Tender Documents

Some of the relevant stipulations defined in the Tender Documents were:

Sub-Clause 1.1.6 of Section 23sd of Specifications (Vol. 2)

The Contractor shall be fully responsible for the provision of the materials as specified and required for the Works in accordance with the Contract. All quarries and borrow pit areas have to be selected by the Contractor. The location and extent of the selected quarries and borrow pits, suitable for the provision of material for the different embankment zones, shall be subject to the approval of the Engineer. *The Contractor may use the quarries and borrow areas as shown on the Drawings or upon approval of the Engineer use other quarries and borrow areas or excavation materials to meet the requirements of this Specification*.

[Emphasis added]

Sub-Clause 1.3.4 of Section 23sd of Specifications (Vol. 2)

Filters 3a:

A. Filters 3a shall consist of sand and gravels derived from Upper Song river borrow area as shown on the Drawings. In principle this materials

shall be processed material extracted from the above-mentioned area.

B. Other sources .... may be proposed by the Contractor to the approval of the Engineer.

Sub-Clause 1.3.4 of Section 23sd of Specifications (Vol. 2)

'Filters 3b:

A. Drain 3b shall consist of sand and gravels derived from Upper Song river borrow area as shown on the Drawings. In principle this materials shall be processed material extracted from the above-mentioned area. The process shall be the screening of river materials.

B. Other sources … may be proposed by the Contractor to the approval of the Engineer.

Sub-Clause 1.3.5 of Section 23sd of Specifications (Vol. 2)

The construction of the sand and gravel fill zones within the dam embankments shall consist of raw gravels materials derived from Witer and Song Rivers.

…

Unclassified sand and gravel 2a shall consist of raw gravels material derived from Witer and Song rivers as shown on the Drawings.

…

Classified sand and gravel 2b shall consist of raw gravels material derived from Witer and Song rivers as shown on the Drawings.

F.6.2 Tender Drawings (Vol. 4)

Tender Drawing No. 1-C-1-A-51-002-0:

The river profile is shown indicating a 5 – 10 m layer of sand and gravel material on top of the gravel bed.

Page 6 of Geology (Vol. 6)

The recent alluviums are composed of:

Terraces of silt or fine sand that lie 4 – 7 m higher than the bottom of the river. It corresponds to flood deposits.

More or less gravelly alluviums with basaltic pebbles in the river beds. The thickness of these alluviums could reach more than 30 metres.

These formations appear only along or in the river beds.

F.6.3 Page 17 of Geology (Vol. 6)

> The Song and Witer river beds are composed of fine sand overlying coarse basaltic gravels.

F.6.4 Page 62 of Geology (Vol. 6)

> In conclusion, river bed sand and gravel are to be used in priority, with a possibility of inland material reserve provided that a specific treatment is carried out (screening, recomposing).
>
> [emphasis added]

F.6.5 Page 69 of Environment Plan

> Noise generated by activities at the sites will be managed in accordance with the requirements of GP8 – Noise Control Plan.
>
> General construction works (excluding blasting) within a distance of 1 km from villages, construction camps …

F.6.6 Disclaimers by the Employer

Sub-Clause 3 .1. of Section 01000 of Specifications (Vol. 2)

> The Employer does not guarantee the correctness of the designations of any data described in this Clause and elsewhere nor any interpretations, deductions or conclusions relative to subsurface conditions.

Instruction to Tenderers (Vol. 0)

> 15. TENDERER TO INFORM HIMSELF FULLY
>
> In submitting a Tender the Tenderer is deemed to have:
>
> (a) Carefully examined the Tender Documents and any other information not being part of the Tender Documents including, but not limited to, the Additional Information for Tenderers provided with the Tender Documents and maps, reports, charts, records and other sources as are available to the Tenderer.
> (b) Visited the Site and fully informed himself and made allowance in his Tender for, *inter alia*, access to the Site, the physical conditions upon and below the surface of the Site, variations in the discharge of rivers and streams, fluctuations in the level of Kashm El Girba Reservoir, transportation facilities, availability of

materials, accommodation, supply of water and electricity and other facilities and conditions affecting the carrying out of the Works or the costs thereof.

(c) Made his own interpretations, deductions, conclusions and assessment of the Site, the subsurface of the Site and the geotechnical, meteorological, hydrological and all other conditions in and around the Site and the circumstances that the Tenderer, if successful in his Tender, may experience or encounter in carrying out the Contract Works.

(d) Informed him of the restrictions, procedures, costs, timings and difficulties associated with the following:

visas, work permits and other approvals for expatriate personnel,

- customs clearances and other approvals for the importation of plant, equipment and materials,
- financial and currency matters.

(e) Established that the local market can provide the number of personnel with the required skills and trades that he needs.

(f) Made full allowance in his Tender for the resources required to fulfil all his obligations under the Contract.

CoC-GC – Clause 4.10 (Vol. 1)

The Employer shall have made available to the Contractor for his information, prior to the Base Date, all relevant data in the Employer's possession on sub-surface and hydrological conditions at the Site, including environmental aspects. The Employer shall similarly make available to the Contractor all such data which come into the Employer's possession after the Base Date. The Contractor shall be responsible for interpreting all such data.

To the extent which was practicable (taking account of cost and time), the Contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Tender or Works. To the same extent, the Contractor shall be deemed to have inspected and examined the Site, its surroundings, the above data and other available information, and to have been satisfied before submitting the Tender as to all relevant matters, including (without limitation):

(a) the form and nature of the Site, including sub-surface conditions;
(b) the hydrological and climatic conditions;
(c) the extent and nature of the work and Goods necessary for the execution and completion of the Works and the remedying of any defects …

Page 1 of Geology (Vol. 6)

This document has been prepared for the Tender Documents and has been made available to the Tenderers for their information, in accordance with clause 4.10 of the General Conditions of the Contract.

As such, it will be considered as accurately describing the physical conditions as they are defined in Clause 4.12 of the said Conditions of Contract.

The Tenderers are therefore invited to interpreting all these data for their accurate assessment of the Geological and Geotechnical conditions of the site.

Conclusions derived from Tender Documents

The conclusion of the Tender Documents is that the River Borrow Areas for sand and gravel were designated under the Contract and that these were the Employer's preferred option for the Contractor. The Employer's reasoning was that:

- The Employer had carried out extensive investigations over the past 40 years and had sufficient basis to conclude that a very large quantity of sand and gravel material could be easily exploited within a short radius of less than 3 km from the Permanent Works.
- The Employer had already incurred substantial costs during the investigations stage and later for the acquisition of the Tender-designated borrow areas. Additional efforts and costs were considered to be avoidable as there was sufficient evidence in support of exploiting the Tender designated borrow areas.
- Investigations in non-designated areas, although permitted by the Contract, would require sufficient investigations to conclude the feasibility of these new areas. Additional investigations would require considerable more time and could possibly delay the exploitation campaign for sand and gravel material. More time would then be required to acquire approved new borrow areas.
- Provided there was good evidence to suggest that the Tender assumptions and investigations were incorrect, the Contractor had no reason and need to venture into unknown areas.
- Notwithstanding the foregoing considerations, the Contractor was fully responsible for the provision of materials as specified and required for the Works in accordance with the Contract.

Having sufficiently strong evidence in support of availability of sufficient sand and gravel material from the Tender-designated areas, the Employer, for the sake of clarity, did point out several times that the risk of unforeseen conditions; unforeseen in respect of expected quantities of sand and gravel material, was still there and that this risk was passed on to the Contractor by the issue of several disclaimers, some of which have been elaborated in the previous Section 6.1.10 of this report.

This would imply that the Contractor was responsible for his own interpretations of the geology and ground conditions, etc. The risks associated with these matters were passed onto the Contractor by the Employer and the Contractor accepted liability for these risks by signing the Contract Agreement. This was precisely the reason why the Employer chose to permit investigation and exploitation of areas which were non-designated as per the Tender; in order to grant liberty to use whatever was appropriate and therefore be fully responsible for the provision of construction materials as required by the Contract.

The complete responsibility of providing the required construction materials was accepted by the Contractor (see earlier sections of this report). Therefore deviations, if any, were entirely at the Contractor's risk. This would essentially imply that the Contractor's claims for unforeseeability may have no basis under the Contract. Unforeseeability was ruled out for the Contractor under the Contract.

F.7 Stage 2 – Contractor's tender submission

The Tender Method Statement (TMS) contained in the submitted Tender by the Contractor confirmed the following:

F.7.1 Page 1 of 22 of Part II of the TMS

Upstream riverbed gravel Borrow Area which located 2.2km u/s of the dam site is mainly for the left bank dyke and dam body.

F.7.2 Page 3 of 22 of Part II of the TMS

2.3.2 Natural gravel Borrow Area
BR2-B: 150,000 m^3
SG1-B: 165,000 m^3
SG2-B: 340,000 m^3
Upstream riverbed area: 2,000,000 m^3

F.7.3 Page 4 of 22 of Part II of the TMS

Table 2.3-2 Backfilling material sources planning table

2a m^3 826,250 – BR2-B, Upper Song river borrow area
2b m^3 985,750 – Upper Song river borrow

F.8 Conclusion in respect of contractor's original intent

The Contractor's Tender Method Statement (TMS) is binding on the Contractor as this is constituent part of the Contract Documents. Therefore whatever means and methods were indicated in the Contractor's Tender Method Statement would be the basis for his costs and should have been included in his Accepted Contract Amount.

Based on the extracts from the previous section of this report, the Engineer concludes that the Contractor undertook to carry out exploitation of the Tender-designated sand and gravel borrow areas. This included the river bed

borrow areas. The Contractor clearly advised his intention, and thus was committed, to exploit the river bed borrow areas.

It is accepted by the Engineer that the choice of non-designated borrow areas was also still available to the Contractor. This would, however, depend on the outcome of investigations in the Tender-designated borrow areas. Provided there was evidence to confirm the unsuitability of a specific borrow areas, the Contractor was obliged by his Tender (or his original) intent to exploit material from the Tender designated borrow areas, including the river bed borrow areas.

It is also foreseen in the Contract that the Contractor could have opted for non-designated borrow areas (route 2) for his convenience and possible cost savings. This would only be valid if the consequence of route 2 is no additional costs to the Employer.

An important conclusion of this section is that the Contractor had opted for and thus included all associated Costs of exploiting sand and gravel material from the river bed borrow areas in his Accepted Contract Amount. This would imply all related Costs of investigating and exploitation, inclusive of the requisite and essential equipment to carry out the exploitation, were already included in the Contractor's budget and in his Accepted Contract Amount.

F.9 Post contract award period

Since the commencement of Works in May 2010, the Contractor has alleged serious issues in respect of exploitation of sand and gravel material from borrow areas. A summary of some of these issues is as follows.

The Contractor's Tender Programme of Works, which was later incorporated in the Contract, indicated that it was the Contractor's intention to start an investigation campaign of the borrow areas on May 15, 2010. The purpose of the investigation campaign was to verify the Tender-designated borrow areas in respect of quality and sufficiency of the various construction materials to be exploited. The Contractor also had the liberty to investigate additional areas which were non-designated in the Tender as long as there would be no resulting Additional Costs to the Employer.

The Tender Programme also confirmed the Contractor's intention to complete the investigations campaign by February 15, 2011 (9 months for investigations).

The Tender Programme also confirmed that the Contractor, after receipt of necessary approvals following the initial investigations campaign, had scheduled to start the exploitation of material latest by the end of April 2011.

The Contractor did not commence the scheduled investigations campaign on May 15, 2010. In fact, very little, if any, progress was made by the Contractor over the next two months. The Engineer therefore, concerned about the lack of progress of the investigations, on July 20, 2010 reminded the Contractor:

> Please initiate your investigations on borrow areas and quarries, hand in your proposals and construction method statements for investigation, *as is your contractual obligation*.
>
> [Emphasis added]

The delay in commencement of proper investigations continued for many months. In particular, the sand and gravel material investigations were yet further delayed. In the meantime, there was minimal progress on such matters. One of the prerequisites for the commencement of investigations was that the Contractor should submit a Construction Method Statement (CMS) for the Engineer's approval.

Meanwhile six months elapsed and the Contractor had not seriously taken up the matter of investigations of borrow areas. The Contractor had not even submitted the requisite CMSs for investigation of borrow areas. Therefore, the Engineer, on November 15, 2010, reminded the Contractor that:

> We look forward to receiving ALL of the outstanding Construction Method Statements for the Contractor's materials investigations of ALL potential borrow areas in the very near future.

The first CMS for sand and gravel material was submitted only seven months into the Contract on December 12, 2010. This was not an overall Method Statement for all the borrow areas for sand and gravel material and was only related to a non-designated borrow area, Badi.

The Engineer notes that the Contractor chose to start his investigations in areas which were not designated in the Contract. The Engineer questions the logic for this decision, whereas, the Tender-designated borrow areas had already been investigated by the Employer over a period of 40 years. The possibility of finding good quality material in such areas was much more likely than in areas which were non-designated.

Meanwhile an overall Method Statement for sand and gravel material borrow areas was submitted on December 22, 2010 for the first time. *The Contractor confirmed that he would carry out investigation of the river Song bed borrow area* and that this would be carried out immediately after the investigation of SG2-B.

The Contractor additionally confirmed, as per the relevant Contract Provision, that:

> Most of this borrow area is under water, a drilling method will be adopted. Drill rig, minimum diameter of which is 101mm, will be carried by above-water platform.

The Engineer confirms that the Contractor's intention to use an above-water platform was in line with the Contract Specifications. The Contractor additionally confirmed that: 'Where suitable material layer is rather thick, the drilling depth shall be 1m below suitable material layer.'

A re-confirmation by the Contractor that drilling method of investigations, as required by the Contract Specifications, would be adopted.

In response to the Contractor's CMS for investigation and exploitation of sand and gravel material in the river bed borrow areas, the Engineer's letter of February 25, 2011 clarified that: 'Full depth cores shall be taken from each one of the 21 No. boreholes in the Upper Song River.'

The Engineer makes a note of these commitments and points out that so far, in August 2012, which is twenty months after the submission of the CMS noted above, the Contractor has not carried out a single borehole (let alone 21 as indicated) in the river bed borrow areas. The Contractor has only carried out some investigation of the river bed borrow areas using a long-boom excavator standing on the river bank. Such investigations were carried out a few times over the past 18 months and the Engineer notes that these cannot be considered to be a suitable alternative to the Contract-specified method of drilling in the river bed.

[The Engineer makes reference to the Contractor's letter of December 9, 2011, which confirms the method of investigation used by the Contractor was a long-boom excavator.]

Considering the Contractor has never carried out proper investigations of the river bed, the outcome of the alternative manner of investigation cannot show the correct results.

The Engineer therefore believes any decisions taken by the Contractor based on the results of excavating a pit (which would immediately collapse, as expected) with a long-boom excavator, were misleading, incomplete and incorrect.

The Engineer notes that this is exactly what the Contractor did. He refused to exploit sand and gravel material from the river bed borrow areas because of misleading results.

There were other reasons given by the Contractor and these other reasons were also misleading and incorrect. Please see Section F.11.1 below for further discussion on the matter of the reasons for refusal to exploit the river bed borrow areas.

The net result, over the last two years, is that the Contractor

- has failed to carry out proper investigation of the river bed borrow areas;
- has failed to exploit the large reserves of sand and gravel material in the river bed borrow areas;
- has, as alternatives, proposed borrow areas which are much further away than the 3km intended at the time of Tender and as a result has claimed additional haulage;
- has gone into non-designated areas which were not fully cleared of locals or were not far away (as required by the Contract) from villages and population. This resulted in several interferences by locals in the vicinity for want of dust suppression and noise reduction, etc.
- has created a situation where the Employer was burdened with additional efforts and Costs in order to make available non-designated borrow areas proposed by the Contractor.
- to this day, in September 2012, has created a severe imbalance of sand and gravel material on Site. This has affected and will continue to affect the progress of the Works.

Rather than take required actions such as start exploitation of sand and gravel material from the river bed borrow areas, meanwhile, the Contractor has issued several claim notices, pursuant to Sub-Clause 20.1 of the Conditions of Contract (CoC), in

respect of various interlinked issues related to the exploitation of sand and gravel material from borrow areas. Some of the major issues claimed by the Contractor, have been:

1. The insufficiency of required sand and gravel material in and around the Site areas. This includes areas designated by the Employer in the Tender Documents.
2. The quality of material available in the river bed borrow areas is unforeseeably different and difficult to exploit and process.
3. Other contractors employed by the Employer used some of the sand and gravel material from the designated borrow areas. The quantity involved in this respect was circa 60,000 m^3 out of a total of 7 million m^3 estimated to be available in the Employer designated borrow areas. One notice was in respect of 10,000 m^3, whereas the second notice involved 50,000 m^3 of sand and gravel material. Unforeseeable Physical Conditions, pursuant to Sub-Clause 4.12 of the CoC, were claimed by the Contractor for the two cases.
4. Forced stoppages, by locals, of exploitation activities in borrow areas chosen by the Contractor in lieu of the river bed borrow areas, which were not exploited due to reason (2) (and other reasons) above.
5. Additional haulage costs, due to an increased distance, for exploitation of borrow areas chosen by the Contractor in lieu of the river bed borrow areas, which were not exploited due to reason (2) (and other reasons) above.

The notices claimed were both in respect of an Extension of Time (EOT) and Additional Costs.

The foregoing matters have been extensively discussed by the Parties and the Engineer. Notwithstanding the matters of claim of additional Time and Costs, the issues involved have resulted in affecting the progress of the Works. There seems to be, in September 2012, an imminent consequence that the vast reserve of sand and gravel material in the river bed borrow areas will not be exploited and will be impounded after the scheduled second stage river diversion in the first quarter of next year (2013). This would imply a severe imbalance of sand and gravel material in the future, such that completion (or timely completion) of the Works may not be possible.

F.10 Contractor's reasons for refusal to exploit the river bed borrow areas

Considering the importance, due to the presence of vast reserves, of exploitation of sand and gravel material in the river bed borrow areas, it is important to understand the reasons why the Contractor has never taken these matters seriously. This is contrary to the Contractor's original intent and commitment as shown in the Tender Method Statement (see earlier Section F.2 of this report). The following needs to be reviewed to understand the Contractor's reasoning:

1. Contractor's letter of August 15, 2011 reasoned that:

> Drawings in Volume 4/7 of the Contract Documents indicate that there are sources of sandy gravel located in Witer River which can be adopted

as borrow area. However, investigation results show that Witer River bed has 6m – 7m fine sand cover. During investigation, in borehole B2-03, sandy gravel thickness is 6.25m. In borehole B2-04, sandy gravel thickness is 5.05m (hole-drilling finishes at 5.05m). Sandy gravel thickness in borehole B2-05 is only 1.2m.

Therefore, we come to a a conclusion that Witer River bed is not a suitable borrow area for sandy gravel. We will seek a new source of sandy gravel at Witer River left bank and right bank.

2. The Contractor's letter of August 25, 2011 reasoned that:

> According to drawings in the Volume 4 of Contract Document, some sand and gravel borrow areas lie at Upper Song Riverbed. And according to a typical section of the Song Riverbed Earth Dam in Contract Document, a layer of fine sand with the thickness of 6 – 7m covers Upper Song Riverbed. Meanwhile, with reference to geological mapping for pile foundation construction of Song River, fine sand at pile P2-1 is 5.7m thick, fine sand at pile P2-2 is 5m thick, fine sand at pile P3-1 is 3.3m thick and that at pile P3-2 is 4.8m thick.
>
> According to the above-mentioned factors, the Contractor considers that sand and gravel borrow area lying at the Upper Song Riverbed does not possess exploitation conditions. Thus the Contractor will search for new borrow areas on both left and right banks of Upper Song River to make up for the shortage of materials.

3. Contractor's remarks noted during Materials and Embankment Progress Meeting held on October 14, 2011 (and during all previous meetings since June 24, 2011) reasoned that:

> Engineer repeats that situation is unchanged as the Contractor's management has replied that the Contractor has not the technical and logistic capabilities to perform the investigation (field works) and has not the technical capabilities on site to perform exploitation of gravel/sand out of the Song and/or Witer riverbed, although that borrow areas were described in the signed contract.

4. The Contractor's letter of February 15, 2012 reasoned that:

> Apparently, Contractor did not abandon the Upper Song river area but out of difficulties of exploitation. Actually, Contractor has tried several times to investigate the Upper Song river area as we have informed the Engineer in letter (1). At the same time, Contractor tried as far as possible to find borrow areas on land. As of today, Contractor has identified and investigated new sand/gravel Borrow Areas around the Site. Presently, Contractor will conduct pit investigation in some potential river areas, as advised in the Contractor's letter dated 20 Jan. 2012.

5. The Contractor's letter of July 14, 2012 reasoned that:

> Following the requirement in the Engineer's letter, the Contractor now submits the Sand and Gravel Exploitation Schedule to the Engineer for your information, in which, for the Upper Song Riverbed area in the bidding document, its overburden is *very thick* and its underwater level is shallow so that its exploitative possibility and usability is very little. New investigated upstream riverbed material (from Locations 2, 4, 5 and 6) will be used as material 2a and 2b for embanking riverbed embankment dam. The Contractor plans to exploit these borrow areas in dry season after water level falls down in January, 2012. Exploited material will be stocked in upstream and downstream temporary stockpiling areas.

Based on the 5 references quoted in the foregoing, the Engineer notes that there are mainly two reasons given by the Contractor;

1. There is a 3 – 7 m layer of sand on top of the layer of river bed gravel, and
2. The Contractor does not have the technical and logistic capabilities to perform the exploitation of the river bed sand and gravel borrow areas.

The foregoing reasons need to be analysed, in respect of an entitlement, vis-à-vis the Tender Documents and this is detailed in a later section of this report.

F.11 Equipment required for exploitation of river bed borrow areas

It is important to verify the availability of the necessary equipment for investigations and exploitation of the sand and gravel borrow areas in the river bed borrow areas. In this respect the following details are relevant:

- Reference is made to Section 1.3.2.1 (Equipment for Drilling Work) of Section 02sg of the Specification (Vol. 2):

> Equipment shall be suitable for operation on surface as well as through water. A pontoon or a floating barge with a centre hole for drilling is required from the Contractor where the drilling rig and the necessary CPT equipment can be placed. The position of the pontoon or floating barge has to be fixed with at least four anchors in the river channel. Tug boats shall be of sufficient capacity to allow for safe shifting operations also under high river discharges.
>
> The pontoon or floating barge must be big enough to accommodate the facilities of a counterweight as compensation for the performance of the Cone Penetration Test (CPT).

> Alternatively an off-shore drilling platform with a centre hole for drilling is a viable solution. The drilling equipment shall include:
>
> The Contractor shall use rotary drilling machines capable of drilling at angles up to 45 degrees from the vertical and driving casing through soil and river sediments including all required appurtenances, suitable for a maximum drilling depth of 80 m and for a borehole diameter of 101 mm (HW-size) and a final core diameter of 86 mm.

- In response to the Contractor's CMS for investigation and exploitation of sand and gravel material in the river bed borrow areas, the Engineer's letter of February 25, 2011 requested the Contractor to advise: 'details of the proposed dredging equipment to the Engineer'.
- In response to the Contractor's CMS for investigation and exploitation of sand and gravel material in the river bed borrow areas, the Engineer's letter of March 19, 2011 requested the Contractor to advise:

> Still the equipment list in the CMS does not include the pontoon with tug boat. Anchoring, etc. as an equipment item for offshore drilling in Upper Song River.

The Engineer's letter of April 09, 2011 advised the Contractor that:

> For embankment construction the Contractor intends to use local available gravel material as indicated in the Contract. As indicated in the Tender Drawings, both rivers – Upper Song River and Witer River – are a potential source of vast sand and gravel materials. Possible exploitation methods of such sources are e.g. bucket ladder dredgers, which are designed as floating or ashore plants. Ashore bucket ladder dredgers reach a depth of 12m. In exceptional cases 15m. floating bucket ladder dredgers reach a depth of 18 m. In exceptional cases more than 20m. They are manufactured for different size of the buckets and therefore in capacity. Grab dredgers are designed as floating plants. They have a grab size between 4 and 15 cbm. There exist many manufactures. As an example, the address details of one are given in the following:
>
> | | |
> |---|---|
> | Samten GmbH | Tel.: +88-6204-9669-0 |
> | Zedelinstraße 8 | Fax: +88-6204-9669-33 |
> | D-68339 Girnheim | Email: sanrale@santen-girnheim.le |
>
> Would the Contractor please inform the Engineer whether he will make use of the sources indicated in the Contract documents or he will use other and which resources for embankment construction?
>
> The Contractor is instructed to submit a Construction Method Statement detailing the sources the Contractor intend to use for embankment

construction materials (sands and gravels) and how the Contractor will exploit these sources. The Construction Method Statement shall include all details such as, but not limited to, type of equipment, maximum capacity, average capacity, required staffing, equipment and a resourced time schedule including shipment, erection, commissioning up to operation of the plant.

The Contractor's action is required as a matter of urgency.

In summary, the Engineer notes the following:

1. The Tender Specifications specified a method, and means, of carrying out investigations of the river bed borrow areas.
2. The Contractor has, in some of his CMS submissions, indicated the use of such equipment, whereas other CMS submissions completely ignored such requirements.
3. The exploitation of sand and gravel material from the river bed borrow areas would require special equipment, such as special dredgers. Considering such equipment had not been mobilized by the Contractor, the Engineer accordingly advised the Contractor to mobilize such equipment.
4. The Contractor had mobilized neither equipment for investigations nor for exploitation of the river bed borrow areas.

F.12 Engineer's analysis of the foregoing circumstances and facts

The Engineer has carried out a detailed analysis of all related circumstances and events and concluded on the notices issued by the Contractor. Such analysis and conclusions are detailed in this report. The objective of the conclusion is to assess the Contractor's entitlement, if any, in respect of the notified events.

Once a conclusion of the Contractor's entitlement is established, this should help both Parties (the Employer and the Contractor) to take appropriate actions to avert further delays and additional costs due to the exploitation of sand and gravel material borrow areas.

The following facts and circumstances should be taken into account in order to conclude on the matter of the Contractor's entitlement, for an Extension of Time (EOT) and/or Additional Costs, in respect of several claim notices related to sand and gravel borrow areas. Such facts, circumstances and conclusions have been detailed by the Engineer in later Sections of this report.

The factual data presented in earlier Sections of this report, needs to be analyzed and construed with sound reasoning to conclude liability for the sand and gravel material issues resulting in several claims from the Contractor. The allocation of liability of the notified claims depends on the conclusion in respect of several matters. Some of the key matters are discussed and concluded in the following paragraphs.

F.12.1 Root cause of issues related to shortage of sand and gravel material

There have been several inter-linked issues resulting in the insufficiency of sand and gravel material for the Works. The root cause of all issues notified by the Contractor was the Contractor's refusal to use the river bed borrow areas for exploitation of sand and gravel material. This was to be the case, as major portions of designated sand and gravel material were meant to have been exploited from the river bed borrow areas. By not using these major portions, the Contractor created an imbalance of the sand and gravel material.

Provided the quantities foreseen in the river beds were small, and the Contractor had opted to investigate and exploit alternate areas, the material balance would not have suffered and would not have resulted in exasperating the sand and gravel material issues. This was, however, not the case as major quantities of sand and gravel material were involved and an offset of these implied a major shift from the Tender intent for both the Employer and the Contractor.

Some of the notices given by the Contractor involved the locals in the vicinity of handed-over borrow areas, who caused a disturbance by trespassing and objecting to the presence of the Contractor in the area. Their usual complaint was that there was too much dust or noise or occupation of land, which was outside the limits of handed-over areas, etc.

The Engineer considers that the Contractor should have taken appropriate precautions against nuisance elements such as dust and noise in the vicinity of the borrow areas. The Contractor had agreed to abide by the Provisions stipulated in the Contract to avoid such nuisance to the community. The Environment Plan, EP (see Section F.1.9 of this report), stipulates restrictions in respect of minimum distance of work areas and the local villages. Additional stipulations specify dust suppression and noise abatement.

The Engineer, therefore, considers the Contractor fully responsible and culpable for such events as he should have complied with the relevant provisions of the EP to avoid such incidents.

Again it is important to point out that most of the issues involving trespassing by local residents were within the non-designated borrow areas, which were not scheduled to have been made available to the Contractor prior to commencement of dam impounding at the end of the Project. Thus the root cause of not exploiting the river bed borrow areas was due to the Contractor having to go into areas not foreseen for acquisition by the Employer till the end of the Project.

Based on the previous few paragraphs it is concluded, by the Engineer, that the root cause of the issues related to sand and gravel material was the Contractor's refusal to exploit the river bed borrow areas. A conclusive opinion on this matter should, therefore, be able to establish liability for the events related to insufficiency of sand and gravel material and related issues. This opinion is detailed in later sections of this Engineer's report.

F.12.2 Contractor's reasons for refusal to exploit the river bed borrow areas

The Contractor over the course of the last two years has opted to refuse discussion on the matter of exploiting sand and gravel material from the river bed borrow areas. Several reminders were issued to the Contractor, both verbally at meetings and via correspondence. The usual response of the Contractor was to refuse comment on the matter or ignore the Employer and Engineer's advice. It was after one year into the Contract, in the middle of year 2011, when the reasons detailed in earlier Section F.11.1 of this report were given to the Engineer/Employer. An evaluation and assessment of these reasons follow:

1. Reason 1: This reason related to the quality and quantity of sand and gravel material. This reason was given several times by the Contractor (see various letters and minutes, etc. in Section F.11.1 of this letter). Reviewing the various correspondence, it seems the Contractor was contradicting his own statements and his clear reasoning is not clearly apparent. The Engineer has interpreted the Contractor's reasoning and concludes some or all of the following reservations by the Contractor/
    1. There is a 3 – 7m layer of sand on top of the layer of river bed gravel.
    2. The Contractor confirms, in one of the references noted in Section 7.1, that the Tender had clearly indicated that there will be a layer of sand and gravel borrow areas on top of the gravel bed and that the thickness thereof was indicated to be within 7m.
    3. The overburden (whether sand and gravel borrow areas or other materials) is very thick.
    4. The layer of sand and gravel borrow areas on top of the gravel bed is not thick enough. This conflicts with reason (1).
    5. The layer of gravel is not very deep.
    - The Sub-surface reports and drawings, included in the Tender, clearly indicated that there is such a 3 – 7m layer of sand on top of the gravel bed. As noted in point (2) above, the Contractor has recognized this fact and yet has claimed unforeseeability. There is an obvious contradiction by the Contractor.
    - Alternatively the Contractor is not clear as to the exact problem that he allegedly faced.
    - The Contractor has given various reasons, most of which contradict each other.
    - The actual case, as reported by the Contractor, is more or less where the Contractor discovered a layer of 3 – 7m of sand on top of the gravel bed.
    - The Engineer fails to understand how there can be any Unforeseeable Physical Condition (UPC) when the tender representations turned out to be precisely in line with the actual case.
    - The basis of the Contractor's assessment is the boreholes (or whatever investigation) he carried out at the time of construction of the bridges across River Witer. The location of this bridge is approximately 1 – 2 km downstream of the limits of the river bed borrow areas, as indicated on drawings and as handed over to the Contractor. It is a commonly accepted geological consideration

that the Sub-surface condition can be variable; variable to the extent of being completely different in different locations.

- The Engineer therefore points out that the basis of assessment of the Sub-surface strata is the investigation at a location far away from the designated areas of the river bed borrow areas. Such conclusions are therefore misleading and should not form the basis of such an important decision for the Project: the decision to abandon the vast reserve of sand and gravel material in the river beds. This reason is notwithstanding the reasoning of earlier bullet points of this sub-section.
- Based thereon, the Contractor's reason 1 is considered inappropriate and irrelevant to the claimed matters and that the Contractor does not have a UPC case.

2. Reason 2: The Contractor does not have the technical and logistical capabilities to perform exploitation of the river bed sand and gravel borrow areas.
   - Section F.11.2 earlier in this report details the issues involved in respect of suitable equipment for investigation and exploitation of sand and gravel material from the river bed borrow areas. The conclusion of Section F.11 is that the Contractor had mobilized neither equipment for investigations nor for exploitation of the river bed borrow areas.
   - Based thereupon, it was no surprise that the Contractor did not have the technical and logistical capabilities to carry out the exploitation of the river bed borrow areas.
   - It was entirely the Contractor's responsibility under the Contract to ensure availability of the requisite equipment and failure to do so was a breach of the Contract and in particular Sub-Clause 4.1 of the General Conditions of Contract.

   Based on the foregoing assessment, the Engineer's opinion is that the Contractor had no sound reason to abandon the exploitation of sand and gravel material from the river bed borrow areas. Any associated costs due to this abandonment should be on account of the Contractor and that the Employer should have no liability in respect of any of these Costs.

F.13 Additional costs and delays

Based on earlier sections of this report, it is concluded that the Song and Witer river bed borrow areas were specified (or designated) in the Contract. Alternatively, the Contractor was given the choice and opportunity to propose, test, get the Engineer's approval and use sand and gravel material from other sources; sources which were not designated in the Contract. There was an implied requirement in the Tender (and later the Contract) that exploitation from such additional borrow areas should not be the cause of Additional Costs to the Employer.

The Contractor's Tender Method Statement confirmed that the Contractor will utilize and exploit sand and gravel material from the River Bed Borrow Areas. This essentially means that the costs related to borrowing from the river beds were included in the Accepted Contract Amounts for the Contract.

Meanwhile, since the commencement of the Works, the Contractor has, albeit extremely late, carried out investigations in various borrow areas for sand and gravel material. The Contractor has essentially ignored, despite repeated reminders from the Employer and the Engineer to the contrary, the designated river bed borrow areas.

Due to the prevailing progress of Works and the impending second Stage River Diversion, there is a very small window of a few months available to the Contractor for the exploitation of the river bed sand and gravel material.

In summary, the Contractor has failed to utilize the sand and gravel material from the river beds. This was the choice of the Employer (as specified in the Tender Documents), the Contract and *the Contractor's own preferred choice at the time of Tender*.

It is confirmed by the Contractor's Tender Method Statement that the cost, of exploitation and delivery thereof to the Work areas, of sand and gravel material, from the river bed borrow areas, was included within the Contractor's Accepted Contract Amount (ACA) for the Contract. This is a direct deduction from the Contractor's Tender Method Statement. The use of river bed borrow areas was thus the Contractor's original intent.

Having deviated from his original intent, in actual case, the Contractor chose not to investigate and use the river bed borrow areas. The Contractor has, as an alternative or as a replacement, identified sand and gravel material borrow areas, which were not designated in the Tender (or non-designated borrow areas). As a matter of principle, this concept is within the ambit of the Contract and is therefore acceptable to the Engineer.

Meanwhile it is an important consideration to verify if the exploitation of non-designated borrow areas by the Contractor has resulted in Additional Costs to the Employer. The answer to this question is, yes, the handing over of borrow areas which were non-designated has been the cause of additional financial burden on the Employer. In addition, the procedures involved in ensuring handing over of such borrow areas to the Contractor were painstaking and involved a lot of 'red tape' for the Employer. Approvals from concerned government authorities, payments to land owners and residents and other formalities involved a lot of time, effort and costs to the Employer; such time, effort and costs were unforeseen under the Contract due to the following reasons.

- The Tender-designated borrow areas had been finalized after decades of investigations by the Employer and his experts. A review of the complete volume 6 of 7 of the Tender documents entitled, Geology, details all the various authorities, subcontractors, experts, consultants and laboratories used by the Employer over the past forty (40) years. Thus there had been a thorough investigation, involving major expenses, resulting in setting out conclusions which became the basis of the designation of borrow areas in the Tender documents.
- One conclusion of the investigations was that the Contractor was designated the river bed borrow areas with estimated quantities of sand and gravel material which would fulfil the major chunk of the sand and gravel material requirement for the Works. The costs involved in making the river bed borrow areas available to the Contractor for exploitation were already included in the Employer's budget and most of these costs had already been incurred.

- The Contractor's refusal to use the river bed borrow areas meant that years of investigations and expenses undertaken by the Employer would go to waste and instead the Employer was burdened with Additional Costs involved in the allocation and acquisition of areas unforeseen by the Employer to be required during the currency of the Project. Most of the areas made available to the Contractor in lieu of the river bed borrow areas, have been in areas which were not required for acquisition till the end of the project at the time of impounding of the Reservoir.
- Most of the areas additionally acquired by the Employer, for the purpose of sand and gravel material borrow areas for the Contractor, are within the limits of the future Reservoir for the Dam. The Employer did not allocate funds nor had the required approvals and authorizations to exploit these areas over the last few years. These areas were not foreseen, as per the Programme of Works, to be acquired till the end of the Project. The resettlement of residents of these areas was yet another cause of great effort and expense to the Employer.
- The Engineer appreciates that the resettlement (from the future Reservoir areas) of local populace had to be undertaken some day. However, this was not any time soon and the Employer had accordingly worked out a long-term plan with the respective government authorities. To bring forward such plans by several years meant a lot of effort and Additional Costs; Additional Costs which would not be required to have been incurred by the Employer.
- The Contractor's refusal to use the Tender-designated borrow areas meant the material balance for the Works was constantly at risk of being disturbed; disturbed to the point where the effects of such imbalances resulted in delaying the Works in several instances.

F.14 Unjust enrichment of the contractor all at the expense of the employer

Based on the facts discussed earlier in this report, it is evident that the Contractor should have allowed for all the costs associated with investigation and exploitation of river bed borrow areas. These are deemed to have been included in the Accepted Contract Amount (ACA).

The Contractor, at the time of Completion of the Works, will be reimbursed the complete ACA. This means that the Contractor will recover the estimated costs of investigation and exploitation of sand and gravel material in the river bed borrow areas, as these are deemed to be included in the ACA.

Meanwhile the Contractor has not actually investigated and exploited sand and gravel material from the designated river bed borrow areas. Instead the Contractor has incurred costs related to investigating and exploiting alternate (or non-designated) borrow areas. The costs of investigating and exploiting from non-designated borrow areas are much less than similar costs of river bed borrow areas in the ACA. The reasons for this are:

- The Contractor did not have to spend time, effort and money to acquire the non-designated borrow areas as these were handed-over to the Contractor by

the Employer. This means there were no costs to the Contractor for this element of exploitation of sand and gravel material from non-designated borrow areas.

- Instead of the Contractor, the Employer had to spend time, effort and money to acquire the non-designated borrow areas.
- Considering some of the non-designated borrow areas, which were proposed and exploited by the Contractor, were at a distance greater than the permitted 3 km in the Contract, the Contractor must have spent more on haulage than what he would have spent if he had utilized the river bed borrow areas, which were within the permitted 3 km .
- Although the Contractor may have spent more for haulage, the Contractor has submitted several claims merely because of over haulage of exploited sand and gravel material. If the Engineer considers the Contractor to be entitled to get reimbursement of the over haulage costs, the Contractor will be refunded the additional costs that he has incurred in respect of haulage of sand and gravel material from non-designated borrow areas.
- The cost of exploitation on land (onshore) is principally much cheaper than exploitation in the river bed (offshore). This principle would entail that the Contractor has had tremendous savings for this element of the costs of exploitation.
- The Contractor must have had a substantial cost-savings due to reasons discussed in Section 7.2 of this report.
- In summary, the net sum of the above factors is that the Contractor, at the end of the Project, will have a substantial net saving of his costs in respect of his budget in the ACA.
- For the case of the Employer, the additional costs involved have been greatly more than foreseen at the time of Tender. This is essentially due to the reasons detailed in earlier bullet points.
- The net result is that the Contractor will have a major saving of his tendered costs and all this will be at the expense of the Employer. This essentially entails that the Contractor will be unjustly enriched due to his own defaults and culpabilities. The Employer, meanwhile, will have incurred unforeseen Costs due to the Contractor's culpabilities.
- This would be unfair to the Employer and a windfall for the Contractor.
- The Engineer's assessment and consequent Determination will have to take this aspect into account so as to ensure that there are no undue costs to the Employer as a consequence of Contractor defaults detailed earlier.

F.15 Engineer's determination of S&G borrow area claim notices

The Engineer's assessment, review, detailed comments, discussions, and conclusions, in respect of the sand and gravel material borrow area claims, are detailed in the earlier Sections of this report. In summary, the Engineer's conclusion of the claim notices, and Determination, pursuant to Sub-Clause 3.5 of the GCC, follows:

Strictly under the provisions of the Contract

Based on the Engineer's conclusion of Section 4 of this report, the Contractor has failed to comply with the relevant provisions of the Contract and therefore the

Contractor's claims, in respect of sand and gravel material borrow areas, pursuant to Sub-Clause 20.1 of the CoC, are all disapproved.

Setting aside the strict requirements of the Contract (such as time-bar and sufficiency of fully detailed claim, etc.)

Based on the Engineer's detailed comments in earlier Sections of this report, the Contractor is considered fully responsible and culpable for the events claimed by the Contractor. Therefore the Contractor's claims, in respect of sand and gravel material borrow areas, are all disapproved.

For the sake of clarity, the disapproval relates to all the claims notices submitted by the Contractor and otherwise. The Contractor's entitlement, in respect of any and all matters requiring additional time and Additional Costs is considered to be nil (or zero).

The Employer has meanwhile indicated he is considering to prepare a counter-claim for all additional costs and delays due to the Contractor's defaults in respect of all matters related to sand and gravel material borrow areas.

The Engineer, in due course, will evaluate and assess the impact of the Contractor's defaults and culpabilities on the Time for Completion of the various Key Dates specified in the Contract. Results of this analysis will be forwarded to the Contractor for agreement and further necessary action.

For the sake of clarity, the Engineer's Determination, pursuant to Sub-Clause 3.5 of the General Conditions of Contract, of the Contractor's claim notices, in respect of several matters related to the sand and gravel borrow areas, is that:

1. The Contractor is not entitled to any additional costs in respect of the sand and gravel borrow areas exploitation.
2. The Contractor is not entitled to the recovery of costs of over-haulage of sand and gravel materials.
3. The Contractor is not entitled to any Additional Costs resulting from the stoppages of exploitation or haulage activities by third parties (locals, etc.).
4. The Contractor is not entitled (due to any related cause whatsoever) to any extension of the Time for Completion for any of the Key Dates or the Overall Completion Date.
5. The Employer is discharged from all liability in connection with the all claim notices and matters discussed in this report.
6. The Employer is considered entitled to recover, from the Contractor, all Additional Costs associated with the claim notices or the related matters discussed in this report.
7. The Engineer will assess the impact, on the Time for Completion of the Key Dates or the Overall Completion Date, of the events discussed in this report. Such time impact(s) will be due to Contractor's own culpabilities and thus may entitle the Employer, if he wishes to, to recover delay damages, if any, related thereto.

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