Managing the risk of Delayed Completion in the 21st Century

Keith Pickavance

In the early 20th century, the construction industry in the UK thought it would be a good idea to develop some form of cost management: The Quantity Surveyor was borne and thrived for the best part of 70 years. By the 1970's it had become evident that managing cost alone could not achieve certainty of delivery and performance. Indeed, it became universally recognised that if time could not be effectively managed, it was impossible to mange cost. It was then thought that effectively management of time might be achieved by a new professional, the Project Manager.

In those days it was thought that the Project Manager's role in defining relationships, managing people and information could achieve what cost management alone could not. However, it is now also recognised that without contracts that permit effective project control, managing people and information alone will not secure completion on time.

Time modelling, using computers to develop a framework for the prediction of consequences that could be managed technically and objectively have been available for about 50 years. However, it is only in the last 10 years that the computing power and software developments have become available to render the technical objective methods (as opposed to personnel driven subjective) a realistic possibility except in the most unusual circumstances.

Developments in hardware, software and communications services in the last decade have now rendered it virtually impossible to efficiently conduct any business except by the use of computers and electronic services. The construction industry now uses those facilities in design, in manufacture, in procurement, in assembly, in finance and in virtually every other field except in time management.

The Society of Construction Law in London, England first conceived the need for a guide to the management of delay in construction contracts in 2000 and published its "Delay and Disruption Protocol" in October 2002, just over five years ago.

Since then, tens of thousands of copies of it have been distributed electronically and in hard copy, all over the world. In the UK, it is commonly referred to in connection with construction and civil engineering procurement and it is commonly referred to in claims and defences to claims arising out of delay and disruption in adjudications and arbitrations. Numerous articles have been written about it and it is unusual for it not to be the subject of discussion in construction conferences.

It is not always appreciated that there are three parts to the Protocol. There is Section 4, concerning methods of retrospective analysis available to the parties if the recommendations of the Protocol for contemporaneous analysis of cause and effect have not been followed during the course of the work. That section is transparent to every form of contract whether bespoke or standard, in all jurisdictions.

Then the Protocol recommends the use of

Time Impact Analysis to demonstrate entitlement to an extension of time. That guidance is relevant to any form of contract that provides for relief from liquidated damages for the likely effect of an excusable event on completion (if the contractor chooses to use it). It applies to most domestic forms, in common law countries, and it applies to all FIDIC forms.

Finally, it contains recommendations and guidance for the contemporaneous management of the risk of change. That part of the Protocol is not on all fours with the provisions of any of the standard forms of contract currently available, in any country, and it cannot be put into practice unless the Project Manager has his hands freed by significant amendments to contract forms to permit improvement in the way contracts are managed.

Managing the risk of delayed completion is a serious business. When people start thinking about construction they are often thinking in terms of hundreds of millions or billions of dollars; they will also usually be thinking of using what they intend to construct for a specific purpose and sometimes, that means other time-based commitments and often, a planned financial return that must be achieved in order to justify the expenditure.

Getting it wrong by as much as 10% can mean the difference between success and serious failure. But few who embark upon construction projects have in the past considered how they should manage their risk of delayed completion, if manage it at all, except by trying to pass some of it to others.

Delay and overspend in construction and civil engineering is not a domestic problem: it happens all over the world. The fact that so many important public and private projects, internationally, have consistently run late and significantly over budget demonstrates that risk transference simply doesn't work. Why doesn't it work? It doesn't work because under no form of commercially realistic construction contract can the risk of change be borne by the contractor when the employer is the only one empowered to make the change. And delay, disruption and overspend are inevitable when all the risk of change is borne by the employer but the only party given the tools to manage that risk is the contractor, who is also promised that he will receive more time and more money when those risks are not managed. But that is the administrative framework contained in all the standard forms of contract.

So long as the employer relies on the right to vary the works he must carry the liability for any change so ordered; that applies even if the contract has the deceptively reassuring title of "turnkey", "design and build - 'the one stop shop'", "Management contracting", "EPC", "partnering" or even "guaranteed maximum price".

Depending upon the form of contract, apart from voluntary design changes, the employer will typically also take the risk in relation to instructions that have to be given.

- to correct an ambiguity or discrepancy in his requirements
- to correct an error in description (or quantity) in the Bills, specifications or drawings
- to suspend the carrying out of the works
- to avoid a legal or physical impossibility
- to rectify any loss or damage arising from any of the insured risks
- to ensure conformity with any Act of Parliament, Regulation or Statute
- to investigate or dispose of archaeological findings
- to uncover or make openings in work where the works are found to have been carried out in accordance with the contract

Generally, apart from the risk associated with instructions, the Employer will also be required to take the risk of a number of other contingencies, including:

- Force Majeure
- Exceptionally adverse weather.
- A failure of the design team to issue in due time any information, drawings details or instructions (and under some forms, that risk is not dependant upon whether such information is ever requested).
- Civil commotion, strike or lock out.
- The discovery of unforeseeable ground conditions.
- A failure to respond within due time to a contractor's submittal.
- The occurrence of an insured risk.
- A failure to obtain any permission necessary for the development.
- A failure to give, or deferment of possession of, or access to, or egress from any part of the site.
- The default of a nominated sub-contractor or nominated supplier.

- The execution of work, or supply of materials, or goods by others.
- A change in the law.
- The exercise of a Statutory power that affects the supply or use of labour, plant, or materials.
- The Contractor's unforeseen inability to obtain the labour or materials he needs.
- The execution of work under a statutory obligation.
- The use of, or threat of the use of terrorism.
- Compliance with, or non-compliance with the CDM regulations.
- A failure to make prompt payment.

It is of little use to the employer to be told that one of those events has adversely affected progress when it is too late to do anything about it or, even if there is an opportunity, in the absence of the Project Manager having the power to help the employer to do anything to manage the risk of the likely delay to completion that will otherwise follow.

If the Project Manager is to be able to manage those risks he has constantly to know what the contractor intends to do, in what sequence he intends to achieve his aim, when he intends to execute particular activities, what resources he intends to use and how the contractor's progress matches his intent. He also needs to know what other permutations are possible and the cost and time implications of any change to the contractor's intent.

In the days before we used expressions like 'IT', managing the employer's risks under a construction contract except by benevolent intuition, was difficult if not impossible. In those days the employer depended on the contractor for everything. Construction processes were much less complex then. They were less mechanised, they employed less expensive construction techniques and the process was conducted less intensively.

Anyone who was in the construction industry 45 years ago, when critical path programming techniques were first commercially used, can reflect upon the fact that in those days drawings were still being produced with indian-ink pens on starched linen and they can reflect upon way the work was managed in the days before photocopiers, mobile phones and spreadsheets and databases were available. Building and civil engineering is now immensely more sophisticated and expensive, executed very much more intensively and we have small, portable, networked high speed computers, multiple access databases, fast internet connections, e-mail and intranet-based information systems that can be accessed from anywhere in the world. So much has changed.

On the other hand, very little has changed in the way the standard forms of contract envisage the management of the risks in a construction contract.

We now live in a different society than that envisaged by the administrative structure of any of the standard forms currently available. The fact is that the improvements in technology have made it now both possible and eminently sensible for contractors to manage the construction process more professionally than they have ever been able to before, and for the employers to take a structured and disciplined approach to the management of their own risks of change.

Essentially, the purpose of recovery to overcome the effects of a delay to progress must be to save time and hence money. If liquidated damages are sufficient compensation for delayed completion at the contractor's risk, or if it really does not matter when the work is completed, then acceleration or any other method of recovering time will not be cost effective. On the other hand, whenever the liquidated damages are under-measured or where damages are simply not an adequate compensation for late completion, for example the opening of a theatre, completion of a ship for its maiden voyage, the Wembley stadium in time for the 2006 cup final and the 2008 Olympic development, then the employers and contractors time risks must be managed, or default will follow.

Provided that the contract permits it, there are a number of such measures, all of which may be described as acceleration, in which the employer and contractor can reduce the effects of potentially delaying events. Of these, some may, increase the contractor's costs, some will certainly increase the contractor's costs and some, whilst taking some administrative time to implement, may not directly affect the contractor's costs at all. It is generally the case that the earlier recovery processes are put in place, the more options for recovery there will be, the more efficient they are likely to be and the less they are likely to cost.

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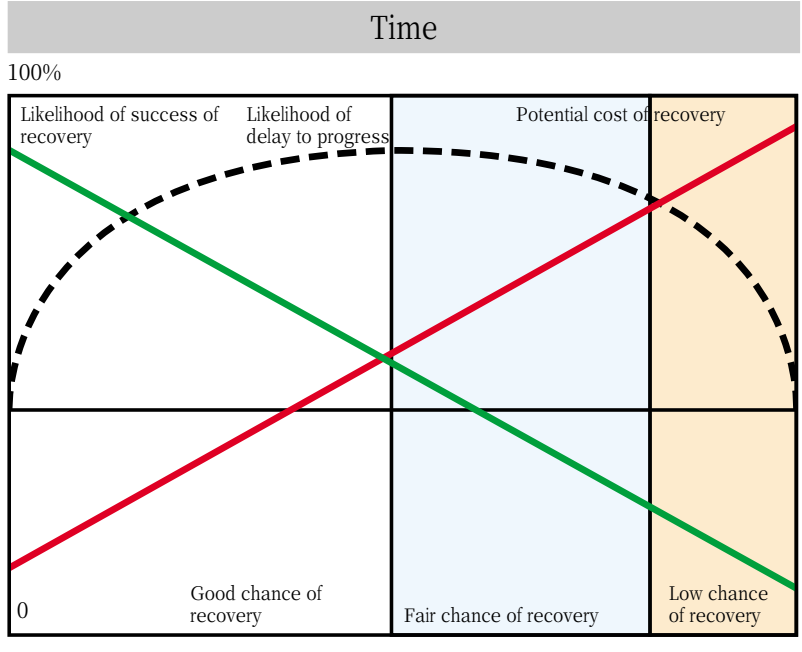

The balance of risk and opportunity to manage risk in the absence of change management procedures

On the other hand, many contractors who are behind programme tend to report that they will recover that lost time until it is too late to do much about it except increase working hours (which is the most expensive and least efficient of all methods available). In broad principle, the ratio of likelihood of a delay to progress in relation to the possibility of successful recovery against the likely the cost is illustrated above.

Generally, in descending order of the usual ratio of cost to benefit, the following are potential methods of accelerating to recover from delay to progress:

1. changing the sequencing of the activities or increasing the overlap between activities;
2. other logic changes to the method of working. using a different process to carry out the activity to that originally envisaged;
3. increasing the motivation of the workforce to achieve higher production levels;
4. increasing the resources allocated to an activity or group of activities on or near the critical path; and
5. increasing the hours worked above the level originally assigned to the activity.

This diagram illustrates that the chances of a delay to progress occurring are about 33% at the beginning and end of a project rising to about 95% in the middle stages. Provided that adequate change management procedures have been implemented during the planning stage, delay to progress can be expected to be capable of being managed without causing delay to completion, and without significant cost.

On the other hand, if change management procedures have not been implemented at the design and pre-contract stages, then after the project is 50% completed, recovery of delayed progress will be costly and, in the last 15% - 20% of the project will be not only extremely expensive but also unlikely to be successful.

In order to take advantage of the cheapest and easiest form of recovery, the project must be properly planned by the use of critical path networks for the process of change management, records of progress must be kept competently and contemporaneously, programmes must be properly updated and the putative effect of slippage and events at the employer's risk must be calculated by impacting the programme at the earliest opportunity. Only in this way can the critical path programme be used as an effective predictive time model that will facilitate the management of the risks that materialise.