



DESIGN RISK IN FIDIC CONTRACTS

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Michael Black QC

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Introduction

This paper examines the legal and commercial considerations affecting one of the principal matters of concern to owners – quality of design in the context of the identification, allocation and management of risk. In order to illustrate problems of more general application, the focus of this paper will be on the provisions of three FIDIC¹ forms: the Contract for Building and Engineering Works Designed by the Employer (the Red Book), Conditions of Contract for Plant & Design-Build (the Yellow Book) and Conditions of Contract for EPC/Turnkey Projects (the Silver Book). All were published in their first editions in 1999.²

The views expressed in this paper are based on English law and do not necessarily represent the views of the writer, but rather are intended to raise discussion points. Parties wishing legal advice on specific contracts should consult their own advisors.

Design risk

‘Design risk’ may be defined as: ‘The risk that design cannot deliver the services at the required performance or quality standards’.³

Professor Nael Bunni has said that:

The theory of risk has developed in the past twenty years or so to such an extent that it is now common knowledge that for a contract to be performed in an effective manner, the inherent risks must be allocated to the contracting parties on some logical basis, which should be made known to them. Thus, it has been said that the main purpose of a contract is to identify the principles of allocating the risks facing the contracting parties.⁴

1 Fédération Internationale des Ingénieurs-Conseils (the International Federation of Consulting Engineers).

2 Extracts from the forms of contract are reproduced by kind permission of FIDIC. The original documents can be bought from FIDIC online at www1.fidic.org/bookshop.

3 HM Treasury, *The Green Book: Appraisal and Evaluation in Central Government – Treasury Guidance* (2003), downloadable from www.hm-treasury.gov.uk/media/785/27/Green_Book_03.pdf.

4 Nael Bunni, *FIDIC's New Suite of Contracts – Clauses 17 to 19*, downloadable from www1.fidic.org/resources/contracts/bunni_0601.asp, following Christopher R Seppala, ‘FIDIC's new standard forms of contract – force majeure, claims, disputes and other clauses’ [2000] ICLR 235.

The issue of risk allocation in construction contracts has occupied the courts on several occasions in recent years, particularly in the context of damage caused by fire and of insurance obligations.⁵ The importance of the availability of insurance cover and its commercial relevance to the allocation of risk will be reverted to below.

The contract terms

Fitness for purpose

The Red Book provides at clause 4.1:

The Contractor shall design (to the extent specified in the Contract), execute and complete the Works in accordance with the Contract and with the Engineer's instructions, and shall remedy any defects in the Works ...

If the Contract specifies that the Contractor shall design any part of the Permanent Works, then unless otherwise stated in the Particular Conditions:

- (a) the Contractor shall submit to the Engineer the Contractor's Documents for this part in accordance with the procedures specified in the Contract; ...
- (c) the Contractor shall be responsible for this part and it shall, when the Works are completed, be fit for such purposes for which the part is intended as are specified in the Contract;

The *Guidance for Preparation of Particular Conditions* (included in the Red Book) does not refer to these provisions. Similar words are to be found at clause 4.1 of the Yellow and Silver Books:

When completed, the Works shall be fit for the purposes for which the Works are intended as defined in the Contract.

Site conditions

Clause 4.10 of the forms of contract deals with site data. There are common terms:

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 subsurface 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 Red and Yellow Books impose on the contractor the obligation to interpret the data. In addition, the contractor's investigation of the site and receipt of necessary information is deemed sufficient only to the extent which

⁵ See *Co-operative Retail Services Ltd v Taylor Young Partnership* [2002] UKHL 17, [2002] 1 WLR 1419, [2002] 1 All ER (Comm) 918, [2002] BLR 272, HL; applied in *Scottish & Newcastle plc v GD Construction (St Albans) Ltd* [2003] BLR 131, CA.

was practicable. The Red and Yellow Books do not specifically state the employer's responsibility for the site data supplied. The Silver Book however provides:

The Contractor shall be responsible for verifying and interpreting all such data. The Employer shall have no responsibility for the accuracy, sufficiency or completeness of such data, except as stated in Sub-Clause 5.1 [General Design Responsibilities].

In the Red and Yellow Books, by clause 4.12, if the contractor encounters adverse physical conditions he may give notice to the engineer setting out the reasons why he considers the conditions to be 'unforeseeable'. If the engineer agrees, he may grant an extension of time and award the additional costs. The Silver Book provides:

Except as otherwise stated in the Contract:

- (a) 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;
- (b) by signing the Contract, the Contractor accepts total responsibility for having foreseen all difficulties and costs of successfully completing the Works; and
- (c) the Contract Price shall not be adjusted to take account of any unforeseen difficulties or costs.

'Employer's Requirements'

Clause 5.1 of the Silver Book provides:

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.

Clause 5.1 of the Yellow Book gives the contractor a period of grace within which to notify the engineer of any error, fault or defect in the employer's requirements:

[W]ithin 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.

The legal context

Fitness for purpose

These forms of contract were initially developed from English standard forms⁶ although, as will be seen below, perhaps they no longer reflect current UK practice.

Under English law and the law of other common law jurisdictions, in the absence of provisions to the contrary, where a contractor undertakes design he will be responsible for the fitness for purpose of that design.

In the well-known case of *IBA v EMI and BICC*⁷ the House of Lords held that a design and build contractor was responsible for the suitability of the design. This was most succinctly expressed by Lord Scarman:

The extent of the obligation is, of course, to be determined as a matter of construction of the contract. But, in the absence of a clear, contractual indication to the contrary, I see no reason why one who in the course of his business contracts to design, supply, and erect [a television aerial mast] is not under an obligation to ensure that it is reasonably fit for the purpose for which he knows it is intended to be used.⁸

The judgment of Judge John Davies QC in the first-instance *Viking Grain Storage* case⁹ is generally regarded as authoritative (though referring to the *IBA* case in the Court of Appeal, rather than the House of Lords). Here the judge held as follows:

6 See Nael Bunni, *The FIDIC Form of Contract: The Fourth Edition of the Red Book*, 2nd edition, 1997, pp 3-20.

7 *IBA v EMI and BICC* (1980) 14 BLR 1, HL.

8 See note 7 above, at p47.

9 *Viking Grain Storage Ltd v T H White Installations Ltd* (1985) 33 BLR 103, QBD (OR).

The suggestion that matters of design should be regarded as involving no higher duty than that of reasonable care was put forward and rejected in *IBA v EMI* (1978) 11 BLR 38, where the judgment was delivered by Roskill LJ, where the Court of Appeal could see no good reason for importing into a contract of this nature a different obligation in relation to design from that which plainly exists in relation to materials. To find otherwise in this particular case, where Viking clearly relied, in all aspects, including design, on the skill and judgment of White to produce an end result would, in my view, be to destroy the whole basis of the bargain. The obligation to design a product fit for its purpose is already tempered by the fact that only 'reasonable' fitness is demanded; to add to that a requirement of proof of lack of due care seems to me to emasculate, and magnify the uncertainty of, the obligation to such an extent as would be neither acceptable nor realistic in a commercial transaction.¹⁰

This is to be contrasted with the responsibility of an architect or engineer who undertakes design. The ordinary obligation is to 'exercise due care, skill and diligence'.¹¹

Other approaches to design risk

English domestic contract forms have assimilated the obligation of a designing contractor with that of a professional:¹²

[T]he Contractor shall have in respect of any defect or insufficiency in such design the like liability to the Employer, whether under statute or otherwise, as would an architect or, as the case may be, other appropriate professional designer holding himself out as competent to take on work for such design who, acting independently under a separate contract with the Employer, had supplied such design for or in connection with works to be carried out and completed by a building contractor not being the supplier of the design.¹³

and

The Contractor shall exercise all reasonable skill care and diligence in designing any part of the Permanent Works for which he is responsible.¹⁴

10 See note 9 above, at p118.

11 See the Australian case *Voli v Inglewood Shire Council* [1963] ALR 657, High Ct Australia, at p 661 (Windeyer J). The position is similar under US law – see *Surf Realty Corp v Standing* 78 SE2d 901 (1953), cited in *Gravelly v Providence Partnerships* 549 F2d 958 (US Ct of Appeals, 4th Circ).

12 The Engineering & Construction Contract, 2nd edition, 1995, makes a 'reasonable skill and care' obligation an option (Option M). The 'Be Collaborative' contract provides both approaches as alternatives in clause 3.4.

13 Standard Form of Building Contract, With Contractor's Design, 1998 edition, The Joint Contracts Tribunal Ltd, clause 2.5.1.

14 ICE Conditions of Contract, Measurement Version, 7th edition, The Institution of Civil Engineers, September 1999, clause 8(2).

Indeed, a similar position is reflected in a number of international forms:

- (i) The Engineering Advancement Association of Japan (ENAA) Contract Model Form states at clause 9.1 that the Contractor must undertake all the works (including design) with ‘due care and diligence’;
- (ii) Under the European International Contractors (EIC) Turnkey Contract, by clause 4.2 the Contractor must use the ‘proper skill and care of professional designers experienced in that type of design’;
- (iii) The Design-Build Institute of America (DBIA) Standard Form of Agreement Between Design-Builder and Designer, Document No. 540 (1999) provides at clause 2.3.1 that: ‘The standard of care for all design professional services performed by Designer and its Design Consultants pursuant to this Agreement shall be the care and skill ordinarily used by members of the design profession practising under similar conditions at the same time and locality of the Project.’

While this paper is not intended to be a treatise on comparative law, it is useful in trying to understand the international matrix within which the FIDIC forms were drafted to have regard to the approach taken to design risk in other major jurisdictions. Two very different approaches are taken in France and the USA.

French lump sum private works contracts require the owner to define clearly the nature of the works, with plans and specifications. The contractor is bound by these plans and specifications and is responsible for the design risk. Article 1793 of the French Civil Code provides that the contractor is not entitled to any increase in price if variations are not authorised in writing and the price agreed with the owner. However, in the event of significant modification to the design requested by the owner disrupting the object of the contract beyond recognition, the contract loses its lump sum character and the owner may be ordered to pay the contractor the cost incurred by the changes.

In the USA, the *Spearin Doctrine*¹⁵ implies two warranties in relation to owner-provided or owner-endorsed information:

- (a) Under the *warranty of accuracy*, the owner warrants that ‘the natural condition of the site is as the owner states,’ even if the misrepresentation concerns a ‘concealed condition of which neither the owner nor the contractor had knowledge’; and
- (b) Under the *warranty of suitability*, the owner warrants that ‘the contractor will be able to complete his contractual obligations by following the [owner-provided] plans and specifications.’

The owner’s implied warranty of the adequacy of the plans and specifications has been adopted in nearly all US jurisdictions and applied to both private and public contracts.¹⁶ A contractor may invoke the doctrine either offensively to obtain resulting costs and expenses or defensively to avoid liability from claims by owners or third parties for damages resulting from the defect,

¹⁵ *US v Spearin*, 248 US 132 (1918), US Supreme Ct (Mr Justice Brandeis).

¹⁶ Philip L Bruner and Patrick J O’Connor Jr, *Bruner & O’Connor on Construction Law*, 2002, §9.81.

provided the contractor followed the owner specifications.¹⁷ Courts do not impose the implied warranties on ‘performance’ specifications, where the owner: ‘simply set[s] forth the performance characteristics of the end product, and leave[s] to the contractor how to achieve those results.’¹⁸ Bruner & O’Connor note that as ‘the liability of design professionals is based on negligence and not implied warranty,’ an owner may be held liable ‘for breach of its implied warranty of design adequacy, even though the owner may have no recourse against the design professional for negligence.’¹⁹

On the closely associated issue of unforeseen ground conditions, Peter Fenn undertook a survey of the international practice on the allocation of risk of unforeseen ground conditions in standard forms of construction contract.²⁰ He found that:

- (a) In Australia, Germany, Italy, Japan and Romania the owner bore the risk;
- (b) In France in the public sector the doctrine of unforeseeability (*théorie de l’imprévision*) covered ground conditions, so the owner was allowed to rescind the contract but was obliged to compensate the contractor;
- (c) In Canada, China, India, Indonesia, Ireland, New Zealand, Portugal, Sri Lanka, Sweden, United Kingdom and United States the risk was shared;
- (d) Only in Hong Kong and Malaysia did the contractor bear the risk.

FIDIC thus allocates considerably more design risk to the contractor as its ‘default position’ than have the draughtsmen of English and other standard forms.

Discussion

Distinction between fitness and skill and care obligations

The importance of the distinction between the two approaches cannot be over-emphasised. Where the obligation is to use reasonable skill and care, design liability will depend on proof of the requisite standard of care, proof of culpable breach of that standard (not all errors are negligent) and causation of loss. It may also admit of defences such as reasonable delegation of duties to independent contractors and the ‘state of the art’.²¹ On the other hand, a ‘fitness for purpose’ obligation is, once the purpose is communicated to the contractor and there is reliance on his design, absolute.²²

17 Steven GM Stein (editor-in-chief), *Construction Law*, 2001, §18.02.

18 Edward B Lozowicki and Erik Hanshew, *The Spearin Doctrine: Defective Specifications*, Coudert Brothers Briefing, 2001, downloadable from www.coudert.com/publications/articles/020615_15_spearin_cb.pdf.

19 See note 16 above, at §9.81.

20 Peter Fenn, ‘Review of international practice on the allocation of risk of ground conditions’, [2000] ICLR 439.

21 See generally John L Powell & Roger Stewart (general editors), *Jackson & Powell on Professional Negligence*, 5th edition, 2002 and second cumulative supplement 2004, paras 8-131 to 8-179.

22 See IN Duncan Wallace, *Hudson’s Building & Engineering Contracts*, 11th edition, 1995. paras 4-071 to 4-072.

In the context of the Silver Book, the fitness for purpose obligation must be read with clause 5.1, which makes the contractor responsible for the design of the work and for the accuracy of 'the employer's requirements', including design criteria and any calculations. Making the contractor responsible for the employer's own errors could make the fitness for purpose obligation even more onerous.²³

Rationale for FIDIC's position

The *Introductory Note* to the first edition of the Silver Book seeks to explain FIDIC's position:

During recent years it has been noticed that much of the construction market requires a form of contract where certainty of final price, and often of completion date, are of extreme importance. Employers on such turnkey projects are willing to pay more – sometimes considerably more – for their project if they can be more certain that the agreed final price will not be exceeded ...

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 ...

[I]t 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 [sic] 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 recognised and regularised. By providing a standard FIDIC form for use in such contracts, the Employer's requirements for more risk to be taken by the Contractor are clearly stated. Thus 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 ...

Employers using this form must realise that the 'Employer's Requirements' which they prepare should describe the principle and

23 Nicholas DJ Henchie, 'FIDIC conditions of contract for EPC turnkey projects – the Silver Book problems in store?' [2001] ICLR 41, at p47.

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 ...

These Conditions of Contract for EPC/Turnkey Projects are not suitable for use in the following circumstances:

- If there is insufficient time or information for tenderers to scrutinise and check the Employer's Requirements or for them to carry out their designs, risk assessment studies and estimating (taking particular account of Sub-Clauses 4.12 and 5.1).
- If construction will involve substantial work underground or work in other areas which tenderers cannot inspect.
- If the Employer intends to supervise closely or control the Contractor's work, or to review most of the construction drawings.
- If the amount of each interim payment is to be determined by an official or other intermediary.

Criticism of FIDIC's position

If the experience of the writer is common, it is unlikely that any contractor believes that he has been given sufficient time or information before tendering. This is particularly so where (which is far from unusual) considerable design work has been undertaken by the employer's consultants pre-tender. Further, it is likely in any major infrastructure project that the three other contra-indications in the quotation above will also apply.

The FIDIC approach has therefore come in for criticism: at the most basic level, Hazel Fleming has argued that the juridical basis for the implication of a fitness for purpose term in design and build contracts under English law is 'obscure'.²⁴ The EIC have said of clause 4.12 of the Silver Book that 'it is

²⁴ Hazel Fleming, 'Fitness for purpose: the implied design obligation in construction contracts' (1997) 13 Const LJ 227, at p241.

difficult to imagine a clause which would be more threatening to contractors and which would leave them more open to unscrupulous employers'.²⁵

It has also been pointed out that a contractor may not be able to insure the risk.²⁶ A contractor may have no 'state of the art defence' and may be liable even if the state of knowledge across the industry is such that a particular design fault would remain undetected by other competent contractors.²⁷ Even where the contractor's design meets the employer's requirements, as formally stated, the contractor may be liable if the requirements are themselves insufficient to meet the purpose.²⁸

The allocation of risk has even been criticised from within the ranks of FIDIC's own Task Groups:

The concept of turnkey in its pure form is that the employer goes away entirely and returns when the contractor has a completed project ready to meet the performance specification. This form seems to be a long way from that concept. Although the employer has a legitimate interest to ensure that the stage payments being made are not being wasted, the ability to instruct, vary and condemn may go too far here. Responsibility for the result is not diminished if the employer does choose to interfere and instruct how the work is to be done, although the contractor can record his objections to a variation.

The Silver Book appears to be taking a position in the market, less as a pure turnkey contract but rather as a design-build form with increased risk on the contractor. Neither contractors nor employers think that the mix is right for a true turnkey, although we will no doubt see it adapted to suit particular requirements. FIDIC encourages the use of the form whenever price certainty takes high priority in the thinking of the employer, and this is likely to be the approach in practice.²⁹

Joseph A Huse and Jonathan Kay Hoyle observe:

The Silver Book itself is largely based on the new Yellow Book. One major difference is that the engineer has been removed in order to make the contract a 'two-party' contract – although in the event that the employer chooses to use a representative he presumably could have powers similar to those of the representative under the Orange Book. Another major difference is that additional risk has been placed on the

25 European International Contractors, *The EIC Contractor's Guide to the FIDIC Conditions of Contract for EPC Turnkey Projects*, 1st edition, 2000, at p15, discussed by Frank M Kennedy, EIC chairman, at [2000] ICLR 505. The *Guide* is now in a 2nd edition, 2003, retitled *The EIC Contractor's Guide to the FIDIC Silver Book*; it can be bought online from EIC at www.eicontractors.de/seiten/publikationen/main.php and from the FIDIC website bookshop (see note 2 above).

26 See note 24 above, at p238.

27 See note 24 above, at p237.

28 Joseph A Huse, *Understanding and Negotiating Turnkey and EPC Contracts*, 2nd edition, 2002, para 8-16.

29 Edward Corbett, *Delivering Infrastructure: International Best Practice FIDIC's 1999 Rainbow: Best Practice?* August 2002, published by the Society of Construction Law and available at www.scl.org.uk (D23).

contractor. However, FIDIC are also apparently keen to promote the Silver Book as a fixed price turnkey contract on a two-party basis not limited to project financing. From this it would appear that FIDIC have not decided whether these changes regarding additional risk constitute 'best practice' or constitute necessary modifications purely in a project financing context. If FIDIC believe that such changes constitute best practice, it should also have made corresponding changes to the new Yellow Book and the Orange Book. However, it is unlikely that contractors will agree that such changes should in fact be characterised as best practice, particularly when they are imposed outside a project finance context.

[T]he Silver Book places completion risk on the contractor additional to that contemplated by the new Yellow Book and the Orange Book. FIDIC state that the Silver Book is suitable for all fixed-price turnkey projects (with a two-party approach). FIDIC apparently believe that the provisions regarding allocation of additional risk to the contractor constitute best practice for all such projects, and not just projects financed on a 'project finance' basis. If this is the case, the authors do not share FIDIC's view.³⁰

Support for FIDIC's position

But the attractions of the FIDIC approach to an employer are obvious. Huse gives the following example:

[I]n the construction of a thermal power plant the employer can set out in the employer's requirements the size and nature of the plant desired, as well as its operational output and the consumption necessary to reach such output. Therefore, if the employer's original conception of the works lacked some element necessary for it to be fit for the purpose intended, the contractor would be responsible for ensuring that the finished works contained the missing element.³¹

In a characteristically staunch defence of the 'fitness for purpose' position, Ian Duncan Wallace QC has argued that a 'best endeavours' style basis of liability may lead to no liability to pass down the line to specialist sub-contractors. He asserts that where the relevant part of the design has emanated from the contractor, there is every reason to insist on strict liability – to balance the inherent disadvantages to owners in design and build contracts, such as designing down to a price and the absence of control.³²

Problems with 'pure' turnkey contracts

However, even though Professor Duncan Wallace considers that a contractor's design liability should be absolute, he does not consider that a turnkey contract is invariably in the interests of the employer. He summarises its potential disadvantages:

30 Joseph A Huse and Jonathan Kay Hoyle, 'FIDIC design-build, turnkey and EPC contracts' [1999] ICLR 27, at p37-8.

31 See note 28 above, at para 2-06.

32 Ian Duncan Wallace QC, 'Letter to the Editor' [1999] ICLR 312.

- (i) there can be little or no check on the reasonableness of prices when tenderers' designs differ;
- (ii) the cost of tendering will be high where the contractor will have to develop the design and all tenderers will seek to pass this on to the employer;
- (iii) there is a pressure to under-design;
- (iv) the cost of checking tenderers' designs will erode the cost benefits;
- (v) it will be difficult for employers to contest variations;
- (vi) the employer will lose control during the construction process;
- (vii) design and build contracts typically contain limitations of liability.³³

These views reflect the survey findings of the Construction Industry Institute (CII) of Austin, Texas, who take the view that clauses placing inequitable burdens of differing conditions are not cost-effective for the owner. In the CII's view, such clauses:

- (i) increase prices;
- (ii) restrict competition;
- (iii) create adversarial relationships;
- (iv) create situations which contractors cannot bear because they cannot control;
- (v) have a negative impact on project performance; and
- (vi) increase claims and disputes.³⁴

The CII report, however, reached conclusions diametrically opposed to those of Professor Duncan Wallace: in particular, it concluded that the risk of differing ground conditions can be assumed most effectively by the owner.

Current UK 'best practice'

FIDIC's apparent views as to best practice do not seem to be shared by the UK Government. The Treasury *Green Book* states:

The governing principle is that risk should be allocated to whichever party from the public or private sector is best placed to manage it. The optimal allocation of risk, rather than maximising risk transfer, is the objective, and is vital to ensuring that the best solution is found. Accordingly, the degree to which risk is transferred depends upon the specific proposal being appraised.

Successful negotiation of risk transfer requires a clear understanding by the procuring authority of the risks presented by a proposal, the broad

33 IN Duncan Wallace, *Construction Contracts: Principles and Policies in Tort and Contract* volume 1, 1986, at para 24-07ff.

34 Construction Industry Institute Research Report SD-44, *Impact of Risk Allocation and Equity in Construction Contracts*, 1989; can be bought online from the CII at www.construction-institute.org/index.cfm.

impact that these risks may have on the suppliers' incentives and financing costs, and the limits to risk transfer which might still be considered for value for money.

Where the private sector has clear ownership, responsibility and control, it should be encouraged to take all of those risks it can manage more effectively than the procuring authority. If the public body seeks to reserve many of the responsibilities and controls that go hand-in-hand with service delivery and yet still seek to transfer significant risk, there is a danger that the private sector will increase its prices.

Appropriate transfer of risk generates incentives for the private sector to supply timely cost effective and more innovative solutions. As a general rule, PFI schemes should transfer risks to the private sector when the supplier is better able to influence the outcome than the procuring authority ...

A risk allocation table can be a useful tool to identify the bearer of each risk relevant to a proposal.³⁵

The Office of Government Commerce's (OGC's) *Effective Partnering*³⁶ suggests that a shared risk register ensures complete understanding for both parties about risks to implementation and ongoing service delivery, and enables a joint approach to managing risks. Examples of Government projects adopting such an approach include: the Prison Service keeping a joint risk register with EDS (its IT services provider) for all major projects; the UK Passport Agency and Siemens Business Services maintaining a joint risk register covering shared risks to successful implementation of the passport-issuing system; and the Criminal Justice System Risk Forum being established to agree approaches to managing shared risks to delivery of the Criminal Justice IT Programme.

The risk register approach is also adopted in the private sector in the new 'Be Collaborative' contract, which provides in clause 4 for the preparation of the Risk Register, its updating, the completion of a Risk Allocation Schedule and the definition and administration of Relief Events.

On 15 October 2004, the Treasury and the OGC released *Managing risks with delivery partners*.³⁷ One of its fundamental recommendations is that risk management 'needs to be fully integrated in day-to-day management'. This emphasises a proactive involvement on the part of the client in the management of identified risks, already reflected in the OGC's *Procurement Guide 09: Design Quality*:

Design must always be managed with a view to achieving the best possible value for money. The way this is done will depend on the selected procurement route. Development of the full design brief,

35 See note 3 above, at Annex 4, paras 13-17.

36 OGC, *Effective partnering – an overview for customers and suppliers*, 2003, from www.ogc.gov.uk/sdtoolkit/reference/ogc_library/generic_guidance/EffectivePartneringpublish.pdf.

37 HM Treasury/OGC, *Managing risk with delivery partners*, 2004, downloadable from www.ogc.gov.uk/sdtkdev/new_content/ManaginRisksDeliveryPartners.pdf.

outline design, detailed design and their transformation into production drawings and specifications is done at different times in the process, and by people with different relationships to the client and to other team members. Effective design management should ensure that:

- the client has communicated aspirations for quality and made the corresponding financial commitment;
- designs comply with the brief;
- the brief itself does not alter (except through formal change control procedures);
- changes are strictly controlled (a cost estimate, time estimate and review of risks must be presented before the agreement of any changes);
- designs are well co-ordinated and communicated at all levels;
- design is completed to programme;
- cost and progress reports are issued at suitable intervals with a minimum of one at outline design and one at detailed design;
- the project sponsor and user group/s are kept involved through meetings and presentations.³⁸

Conclusions

All construction contracts involve a balancing exercise between risk and price. There may be a superficial attraction to an owner in transferring the totality of the design risk to the contractor under a turnkey or EPC contract, but it must be recognised that this may increase the price and expose the owner to an increased probability of claims during the course of the project that may be both difficult to avoid and difficult to contest. Steps taken to ameliorate these problems by substantial involvement in the design, either pre-tender or checking drawings, or in the supervision of the works, may negate the cost advantage over other forms of procurement.

Current UK practice with regard to risk management may be summarised as follows:

- (a) risks should be identified and defined as far as possible during the design and procurement process and the consequences of the occurrence of such risks should be agreed in advance;
- (b) each party to the contract should share the responsibility to manage the contract so far as possible to avoid the occurrence of risk events. This should include a regular review of anticipated risk events. Sharing financial pain and gain may provide incentives to effective management;
- (c) the responsibility to manage the occurrence of risk events should be allocated to the party best able to do so. Conversely risks should not be

³⁸ OGC, *Achieving Excellence in Construction, Procurement Guide 09: Design Quality*, 2003, downloadable from www.ogc.gov.uk/sdtoolkit/reference/achieving/ae9.pdf.

allocated to parties who are unable to manage their consequences. The availability and terms of insurance cover may be determinate as to whether the consequences of risk are allocated to one party or another or shared.³⁹

The draftsmen of the FIDIC terms have chosen, in the case of the Silver Book, to take a different approach. While ostensibly favouring the owner, it would not be universally regarded as according with current best practice nor necessarily in the owner's best interests. It is doubted that in its unamended form the Silver Book is likely to achieve its stated aim of certainty as to price. It is suggested that it is unlikely that the form will be used frequently without substantial amendment.

Michael Black QC is a practising barrister, arbitrator and Visiting Professor of Construction & Engineering Law at the School of Mechanical, Aerospace and Civil Engineering, University of Manchester.

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39 The current best example is Heathrow Terminal 5. There is a legally binding contract between Heathrow Airport Ltd and its key suppliers. British Airports Authority Ltd holds the overall delivery risk. Suppliers take their share of the financial consequences of any risk to the project and also share in the financial rewards of success. Risk payments, which would normally be costed into a supplier's quote, have instead gone into an incentive fund. Key project risks have been insured, in particular professional indemnity for the project as a whole.

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is to promote the study and understanding of
construction law amongst all those involved
in the construction industry’*

MEMBERSHIP/ADMINISTRATION ENQUIRIES

Jackie Morris
67 Newbury Street
Wantage, Oxon OX12 8DJ
Tel: 01235 770606
Fax: 01235 770580
E-mail: admin@scl.org.uk

Website: www.scl.org.uk