

# Allocation of Risk in Construction Contracts

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## Risk in construction contracts

'Risk', in a project delivery context, can be defined as 'an uncertain event or set of circumstances that, should it occur, will have an effect on the achievement of one or more of the project's objectives'.<sup>1</sup> Risk exists as a consequence of uncertainty, and, in any project, the exposure to risk produced by uncertainty must be managed.<sup>2</sup>

Common risks prevalent in construction projects include weather, unexpected conditions, errors in cost estimating and/or scheduling, delays, financial difficulties, strikes, faulty materials, faulty workmanship, operational problems, inadequate plans and/or specifications, and natural disasters.<sup>3</sup> Projects will also have additional specific risks, dependent on their nature and surrounding circumstances.

Although the volume and nature of contractual documentation for a construction project will vary as a consequence of the nature of the project, its scale and the procurement methodology adopted,<sup>4</sup> a construction contract may be simply described as a contract between a contractor and an employer whereby one person (the contractor) agrees to construct an asset for another person (the employer) for agreed remuneration by an agreed time.<sup>5</sup> A construction contract will include a compact of rights and obligations<sup>6</sup> between the parties by which the parties allocate responsibilities between themselves in respect of risks that may transpire during the contract's execution. In doing so, the parties define the impact of the occurrence of risks on three key elements, namely: the asset that is to be constructed by the contractor, the time at which the asset must be completed by the contractor and the amount the employer is obliged to pay the contractor. The collective allocation of such risks in a construction contract represents its 'risk allocation'.

## Pursuit of a 'fair and equitable' allocation of risk

Typically, in preparing the contract document bid package, the employer will be in a position to decide on its intended risk allocation. While there may be a temptation to allocate all or most major risks to the contractor, this must be tempered by an understanding of the potentially adverse consequences of allocating risk where doing so may preclude the submission of bids or result in an increase in cost such that the project is no longer financially viable.<sup>7</sup> Improper risk allocation may also result in prolongation of construction completion times, wastage of resources and/or increased likelihood of disputes. As Shapiro states, 'proper risk identification and

<sup>1</sup> Peter Simon, David Hillson and Ken Newland, *Project Risk Analysis and Management Guide*, Association for Project Management, p.17 (1997).

<sup>2</sup> See Catriona Norris, John Perry and Peter Simon, *Project Risk Analysis and Management Mini-Guide*, Association for Project Management, p.4 (2018).

<sup>3</sup> See Samuel Laryea and Will Hughes, *The Price of Risk in Construction Projects*, p.553 (2006).

<sup>4</sup> See Julian Bailey, *Construction Law*, Volume 1, 2nd ed., p.49 (2016).

<sup>5</sup> Peter Simon, David Hillson and Ken Newland (op.cit.), p.17 (1997).

<sup>6</sup> Julian Bailey (op.cit.), p.1512.

<sup>7</sup> Bryan Shapiro QC, 'Transferring Risks in Construction Contracts', p.5 (2010).

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equitable distribution of risk is the essential ingredient to increasing the effective, timely and efficient design and construction of projects.<sup>8</sup>

While it is of course possible for parties to negotiate all the terms of any construction contract, a number of standard form contracts have been developed and it is common for one of these standard forms to be used as the basis for the final construction contract.<sup>9</sup> One of the features of standard form contracts is the intent to produce a 'fair and balanced' allocation of risk.<sup>10</sup> The rationale for pursuing this is that doing so will provide the best chance of successful project delivery. Echoing Shapiro, Lane notes that, '[a] contract which balances the risks fairly between a contractor and an employer will generally, in the absence of bad faith, lead to a reasonable price, qualitative performance and the minimisation of disputes.'<sup>11</sup> Abrahamson suggests that in order to achieve a fair and equitable allocation of the risks inherent in construction projects, a risk should be allocated to a party if:

- the risk is within the party's control;
- the party can transfer the risk, for example, through insurance, and it is most economically beneficial to deal with the risk in this fashion;
- the preponderant economic benefit of controlling the risk lies with the party in question;
- to place the risk upon the party in question is in the interests of efficiency, including planning, incentive and innovation; and/or
- the risk eventuates, the loss falls on that party in the first instance and if it is not practicable, or there is no reason under the above principles, to cause expense and uncertainty by attempting to transfer the loss to another.<sup>12</sup>

While the principle of control of a risk is a powerful factor in the determination of risk allocation, it is not comprehensive and other principles should be utilised to address adequately the allocation of risk in a construction contract.<sup>13</sup> For example, events of 'force majeure' by their nature cannot be controlled by either party but the consequences of such risks must be assessed and allocated. Bunni proposes that the following four principles are used for allocating risks in construction contracts:

- Which party can best control the risk and/or its associated consequences?
- Which party can best foresee the risk?
- Which party can best bear that risk?
- Which party ultimately most benefits or suffers when the risk eventuates?

The question of what is a 'fair and equitable' risk allocation is, ultimately, a subjective one albeit using objective tests mentioned above by way of assistance; in deciding how to procure a project and to allocate risks, an employer will need to weigh up the theoretical efficiency of the risk allocation with political and market dynamics and the needs of the particular project and its financiers (if any).

## Allocating risk in a construction contract

There are various procurement methodologies or 'routes' by which an employer may wish to procure a construction project. The methodology selected will necessarily have an impact on the allocation of risk in

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<sup>8</sup> Ibid, p. 17.

<sup>9</sup> See Graham Vinter, *Project Finance*, 4th ed., Sweet and Maxwell, p.1 (2013).

<sup>10</sup> In relation to FIDIC, see Ellis Baker, Ben Mellors, Scott Chalmers and Anthony Lavers, *FIDIC Contracts: Law and Practice*, Informa, p.6 (2009).

<sup>11</sup> Patrick Lane SC, 'The Apportionment of Risk in Construction Contracts', International Conference on Arbitration and ADR in the Construction Industry, Dubai (2005).

<sup>12</sup> See article by Max Abrahamson, *Journal of the British Tunnelling Society*, Vols 5 and 6, November 1973 and March 1974; and CIRIA Report R 79 'Tunnelling – improved contract practices' (1978).

<sup>13</sup> Nael Bunni, 'The Four Criteria of Risk Allocation in Construction Contracts', *International Construction Law Review*, Vol 20, Part 1, p.6 (2009).

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certain respects in the construction contract. A summary of the major methodologies and their primary impacts on risk allocation is set out below:

### **Traditional procurement**

In traditional 'construct only' procurement, the employer will engage a design consultant or team to prepare the design for a project and then bid and award a construction contract to a contractor to construct the project in accordance with that design. The employer will take responsibility for the design provided by the design consultant or team and the contractor will be entitled to relief (which may be in the form of an of the time for completion and/or increase in the agreed remuneration) if there are defects or deficiencies in such design. (See the section on the FIDIC Red Book in Chapter 4, 'Introduction to the FIDIC Suite of Contracts' and below.)

### **Design and build**

In a design and build contract, the contractor will be responsible for both the design and construction to meet the contractual specification. This offers the employer 'single point responsibility' and is an advantage relative to traditional procurement where for example it may be difficult to establish whether a defect was caused by defect(s) in design (and therefore the responsibility of the design consultant) or construction (and therefore the responsibility of the contractor). (See the section on the FIDIC Yellow Book in Chapter 4, 'Introduction to the FIDIC Suite of Contracts' and below.)

### **EPC/turnkey**

In engineering, procurement and construction (EPC) contracts, a single contractor takes responsibility for all elements of design (engineering), construction and procurement of a project on a 'turn-key' basis. While similar to design and build contracts, in such EPC contracts the contractor will normally have significant discretion to design the project as it sees fit (so long as requirements of the output based or functional specification are satisfied) and such contracts also typically involve a heavier transfer of risk from the employer to the contractor. (See the section on the FIDIC Silver Book in Chapter 4, 'Introduction to the FIDIC Suite of Contracts' and below.)

## **Allocating specific risks**

Risks that are typically allocated between the parties in construction contracts include:

### **Quantities**

The volume of resources required for a construction project can be a source of uncertainty at the outset of any project. In contracts for a lump sum remuneration, the contractor is paid a fixed amount, regardless of the quantity of resources used. The risk of volumes of resources required therefore sits with the contractor and must be accounted for in the formulation of its bid.<sup>14</sup> Conversely, under a re-measurement contract, the parties agree unit rates for the resources required for some or all of the works and remuneration is calculated based on the actual quantities used. In such an arrangement, in effect the employer bears the volume or quantity risk.

### **Errors in employer-provided information**

In construction projects, it is common for the employer to provide the contractor with a range of information, including requirements for what is to be constructed (for example, the specification for the works), the location and condition of the site on which the works are to be constructed and other factors related to how the works will be undertaken (for example, the permits required for the works, the means of accessing the site and prevailing weather conditions at the site). Such information may be provided to the contractor for 'information only' on a 'non-reliance' basis. In such cases, the risk of errors or inaccuracies in such information will sit with the contractor. Alternatively, the employer may assume some or all of such risk, by allowing the contractor

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<sup>14</sup> This would not apply to a contract based on a full bill of quantities, such as the JCT Standard Building Contract With Quantities 2016.

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time and/or cost relief in circumstances where the information provided by the employer proves to be incomplete or incorrect.

## Unforeseen ground conditions

The risk of unforeseen ground conditions is well known to the construction industry: 'It frequently occurs in practice, particularly in engineering contracts, that unexpected difficulties are encountered during construction which may not only necessitate a change from the expected method of working, but in extreme cases may mean that completion of the work, at least in accordance with the original design, is impossible.'<sup>15</sup>

The effects can be felt in terms of time and money: 'unforeseen site conditions...have an obvious capacity to cause delay and disruption to the performance of works on a construction or engineering project, and to cause an escalation in the contractor's costs.'<sup>16</sup>

Certain types of work have a greater propensity for being affected by ground conditions, but most structures have subsoil foundations of some kind so the phenomenon of unforeseen ground conditions is widely applicable. Accordingly, the potential time and cost consequences should be provided for and taken into account in the parties' forward planning, which includes tender pricing.

In the FIDIC suite of contracts, the Red and Yellow Books have traditionally sought a balanced allocation of risk in Unforeseeable Physical Conditions and related provisions, both as to time and cost. Unforeseen ground conditions are dealt with in a radically different way by the Unforeseeable Difficulties provisions of the Silver Book. (See the section on 'Unforeseen ground conditions' below.)

On 7 May 2019, FIDIC published a new Tunnelling and Underground Works Contract (to be known as the Emerald Book) which was a joint initiative of FIDIC and the International Tunnelling and Underground Space Association. The Emerald Book uses the Yellow Book as a base, but incorporates risk allocation recognising the nature of the works to be undertaken (in particular in relation to subsurface conditions).

## Force majeure

In the course of a construction project, performance of the parties' obligations can be delayed, impaired or altogether prevented by events outside the parties' control. All major legal systems have rules governing the impossibility or inhibition of performance of contractual obligations. The underlying law of the contract selected by the parties, or that which applies in the absence of such selection, is capable of providing remedies and other outcomes to some extent but there is often a significant difference between civil law and common law traditions in this respect.

The concept of *imprévision* has long formed a part of systems deriving from French law and the doctrine of *rebus sic stantibus* is expressly incorporated into the German Civil Code.<sup>17</sup>

In the common law systems and notably in English law, there is no general theory of force majeure, which is not a term of art. The effect is that 'performance of the relevant obligation must have been prevented by an event of force majeure and not merely hindered or rendered more onerous.'<sup>18</sup>

The difference in approaches between jurisdictions explains why parties to construction contracts routinely make their own express provision for force majeure. The treatment of Force Majeure (and now Exceptional Events) under the FIDIC suite of contracts and some other standard forms of contract is discussed further below.

## Change in law

The starting or default position under a construction contract is that, in performing its obligations under the contract, each party will do so in compliance with and so as not to cause any breach of the laws applying to such obligations. In the absence of a specific provision dealing with the consequences of a change in law

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<sup>15</sup> Nicholas Dennys QC and Robert Clay (eds), *Hudson's Building and Engineering Contracts*, 13th ed., Sweet & Maxwell, p.402, (2015).

<sup>16</sup> Julian Bailey (op.cit.), p.697.

<sup>17</sup> Axel-Volkmar Jaeger and Götz-Sebastian Hök, *FIDIC – A Guide for Practitioners*, Springer, pp.329-330 (2010).

<sup>18</sup> Hugh Beale, *Chitty on Contracts*, 33rd ed., Sweet & Maxwell, p.1236 (2018).

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following execution of the contract, such obligations will remain and, in the case of the contractor, absent any entitlement to an extension of time and/or additional costs to the extent any delay is caused and/or additional costs incurred.

## Delay

The risk of delay is typically handled by the contract providing for a time for completion by which the contractor is required to complete the works with liquidated damages for delay becoming payable if the contractor fails to do so. However, in order to preserve such an approach, under English law, it is important for the contract to allow for such time for completion to be extended in the event of the contractor being unable to comply due to an act of prevention on the part of the employer. In practice, construction contracts will also allow for the contractor to be entitled to extensions if delay is caused by other events specified in the contract (often subject to notice requirements) as part of the risk allocation process described above and below.

## Performance Guarantees

Where the contractor is constructing a process plant or other facility that will produce a product, the parties often provide for a set of particular performance related guarantees. The contract will set out a testing and commissioning regime to be complied with before the plant is taken over and, in some cases, afterwards.

As part of the testing regime, certain aspects of the performance of the plant will be measured. To the extent that the plant does not meet the relevant performance guarantee(s), there are various ways to deal with the shortfall. Most contracts allow the contractor the opportunity to make good any faults in order to ensure that the relevant performance guarantee(s) is or are met. However, if the contractor fails to meet the relevant performance guarantee(s) even after attempting to make good such faults, the contract may also provide for payment by the contractor to the employer of liquidated damages by way of compensation to the employer for any limited shortfall in performance. Some contracts will also specify certain minimum performance levels which, if not met, will allow the employer to reject the plant.

## Indemnification

The central characteristic of an indemnity clause is that the indemnifier assumes a primary responsibility for the adverse event covered by the clause and undertakes to hold the indemnified party harmless against the consequences of that event.<sup>19</sup> The use of indemnity clauses in construction contracts has been described as 'governing or re-allocating ultimate contractual responsibility for third party claims as between Employer and Contractor.'<sup>20</sup>

## Insurance

Insurance is a mechanism by which risk can be insured for payment of a premium by a third-party insurer pursuant to a contract of insurance. In construction contracts, parties may mandate that the counterparties hold certain insurances to protect such party and the project against certain insurable risks. The FIDIC forms of contract, for example, pre-allocate responsibility for insuring against certain risks and for bearing loss if and to the extent it cannot be insured or recovered from insurance.

## Allocating specific risks - the FIDIC approach and comparison with certain other standard contract forms

As indicated in Chapter 5, Introduction to the FIDIC Suite of Contracts, at present and for the immediate future, utilisation of FIDIC forms of contract is in a transitional phase. Officially, the position is clear. The second editions of the Red, Yellow and Silver Books were published on 5 December 2017 and are the current versions of those FIDIC standard forms. However, although the authors' firm has received a number of instructions in relation to the 2017 FIDIC forms of contract, the large majority of FIDIC projects under way, and of disputes relating to them, concern the 1999 FIDIC suite of contracts. This text therefore contains

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<sup>19</sup> Gerard McMeel, *The Construction of Contracts*, 3rd ed., Oxford University Press, p.606 (2017).

<sup>20</sup> Nicholas Dennys QC and Robert Clay (eds) (op.cit.), p.1110.

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commentary on the 1999 contracts with updates on changes in the 2017 editions where these are of sufficient significance.

In commenting on and comparing the FIDIC provisions with other standard form contracts, we have also considered certain provisions from the ENAA,<sup>21</sup> IChemE,<sup>22</sup> NEC4<sup>23</sup> and LOGIC<sup>24</sup> standard forms of contract.

## Unforeseen ground conditions

### The Red/MDB and Yellow Books 1999

In the FIDIC Red and Yellow Books, the issue of 'unforeseen ground conditions' is dealt with under the heading 'Unforeseeable Physical Conditions', which obviously is not identical. The FIDIC term<sup>25</sup> extends to 'natural physical conditions and man-made and other physical obstructions and pollutants, which the Contractor encounters at the Site when executing the Works, including sub-surface and hydrological conditions but excluding climatic conditions.'<sup>26</sup> Although this formulation is wider than 'ground conditions', extending beyond geology to hydrology for example, it is also more restricted, referring to 'unforeseeable' rather than 'unforeseen'. Unforeseeability is an objective test for those purposes being defined<sup>27</sup> as 'not reasonably foreseeable by an experienced Contractor by the date for submission of the Tender'.<sup>28</sup>

The 'unforeseeability' test is crucial to the risk allocation for ground conditions and other physical conditions under the FIDIC Red and Yellow Books and three aspects need to be considered in applying it.<sup>29</sup> First, the test is not what was actually foreseeable, but what would have been reasonably foreseeable. Second, the foreseeability is not that of the Contractor, but of an experienced contractor (namely an 'industry standard'). Third, the point in time to which the test refers is the date for submission of the tender (or Base Date for the FIDIC MDB form), which means that it must be seen together with information available to the Contractor (Site Data)<sup>30</sup> and the 'correctness and sufficiency of the Accepted Contract Amount'<sup>31</sup> to obtain a full picture.

The issue of reasonable foreseeability by an experienced contractor under Sub-Clause 4.12 of the Yellow Book was considered in the case of *Obrascon Huarte Lain SA v. Her Majesty's Attorney General for Gibraltar*,<sup>32</sup> where the (English) Technology and Construction Court (TCC) held that the contractor 'did not in fact encounter physical conditions in relation to contaminated soil over and above that which an experienced contractor could reasonably have foreseen by the date of submission of its tender',<sup>33</sup> applying a 'balance of probabilities' test. The Court of Appeal<sup>34</sup> upheld that analysis of the issue.<sup>35</sup>

### The FIDIC Contracts 2017

The definition of Unforeseeable Physical Conditions<sup>36</sup> is similar to that in the 1999 editions, with the addition of the words 'excluding climatic conditions *at the Site and the effects of those climatic conditions*'. The 2017

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<sup>21</sup> ENAA Model Form International Contract for Power Plant Construction (2012 edition).

<sup>22</sup> IChemE The International Red Book (1st edition, 2007).

<sup>23</sup> NEC4 Engineering and Construction Contract (4th edition, June 2017).

<sup>24</sup> LOGIC General Conditions of Contract for Construction (3rd edition, November 2018).

<sup>25</sup> Significantly, the FIDIC provision begins by defining 'physical conditions'. This was a problematic omission from the 4th edition of the Red Book, noted by Jeremy Glover and Simon Hughes QC, *Understanding the FIDIC Red Book: A Clause by Clause Commentary*, 2nd ed., Sweet & Maxwell, p.108 (2011).

<sup>26</sup> Sub-Clause 4.12.

<sup>27</sup> Sub-Clause 1.1.6.8.

<sup>28</sup> In the MDB (Pink) version of the Red Book, 'Base Date' replaces 'Tender'.

<sup>29</sup> Ellis Baker et al. (op.cit.), p.88.

<sup>30</sup> Sub-Clause 4.10.

<sup>31</sup> Sub-Clause 1.1.4.1.

<sup>32</sup> [2014] EWHC 1028 (TCC).

<sup>33</sup> Para 227.

<sup>34</sup> [2015] BLR 521.

<sup>35</sup> A recent discussion of Australian and English cases can be found in Gordon Smith 'Latent Conditions and the Experienced Contractor Test', *International Construction Law Review*, pp.390-412 (2016).

<sup>36</sup> Sub-Clause 4.12, 2017 Red and Yellow Books (emphasis added).

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editions have followed the MDB version of the Red Book in defining 'unforeseeable'<sup>37</sup> as 'not reasonably foreseeable by an experienced contractor by the Base Date', which means 28 days before the latest date for submission of the tender,<sup>38</sup> instead of not reasonably foreseeable at the date for submission of the tender, as under the 1999 Books. The 1999 Site Data provision<sup>39</sup> has been replaced by the Use of Site Data provision,<sup>40</sup> which no longer contains the requirement that 'The Employer shall have made available to the Contractor...all relevant data in the Employer's possession' in relation to the Site. That obligation has been relocated to Site Data and Items of Reference<sup>41</sup> with the addition of 'topography of the Site' and 'climatic conditions' at the Site. The Contractor continues to be responsible for interpreting all such data and is still<sup>42</sup> deemed to have satisfied itself of the sufficiency of the Accepted Contract Amount, the definition of which has been amended by the 2017 forms of contract.<sup>43</sup>

## Other standard contract forms

The IChemE form also incorporates a relatively robust 'reasonable foreseeability' test, which provides that the relevant physical condition has to be such that it 'could not reasonably have been foreseen by properly qualified and competent persons engaged in the same or a similar business to that of the Contractor and having all the information which the Contractor then had or could have obtained by a visual inspection of the Site or by reasonable enquiry'.<sup>44</sup> It also contains relatively detailed requirements in relation to the contents of the notification to be provided by the Contractor to the Employer, which include specifying the condition encountered, the steps the Contractor is taking or proposing to take to overcome the condition encountered, estimates of the effect on the programme and the amount of any additional cost, and the Contractor's proposals for minimising such addition time and/or cost.<sup>45</sup>

The NEC4 form uses a slightly different test, which provides that the 'physical conditions'<sup>46</sup> have to be something that an experienced contractor would have judged at the contract date to have such a small chance of occurring that it would have been unreasonable to have allowed for them.<sup>47</sup>

The meaning of the phrase dealing with the small chance of occurrence of an event was considered in the case of *Atkins Ltd v. Secretary of State for Transport* [2013] EWHC 139 (TCC). Atkins' claim was based on encountering a greater number of potholes than it had anticipated at the time it entered into the contract. Mr Justice Akenhead dismissed Atkins' claim that a higher number of potholes than was expected constituted a compensation event, either as a matter of the language of the clause itself or as a matter of commercial interpretation. While it would be very difficult in practical terms to determine how many potholes would constitute an excessive number and such an exercise would be both difficult and artificial, the real question was whether the likelihood of occurrence of potholes had such a small chance of occurrence that it would be unreasonable to allow for them.

## Changing the risk allocation: the 1999 FIDIC Contracts

Users of standard form contracts are not bound to accept the risk allocation for unforeseen ground conditions (or anything else). The Building Law Reports commentary on *Obrascon*<sup>48</sup> warns that 'Contractors may want to consider whether or not they would be comfortable assuming the risk, or, rather, whether to propose bespoke specificity as to the nature of the ground conditions which are contemplated.'

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<sup>37</sup> Sub-Clause 1.1.85, 2017 Red Book, Sub-Clause 1.1.87, 2017 Yellow Book.

<sup>38</sup> Sub-Clause 1.1.4, 2017 Red and Yellow Books.

<sup>39</sup> Sub-Clause 4.10, 1999 Red and Yellow Books.

<sup>40</sup> Sub-Clause 4.10, 2017 Red and Yellow Books.

<sup>41</sup> Sub-Clause 2.5, 2017 Red and Yellow Books.

<sup>42</sup> Sub-Clause 4.11, 2017 Red and Yellow Books.

<sup>43</sup> Sub-Clause 1.1.1, 2017 Red and Yellow Books.

<sup>44</sup> Sub-Clause 6.3, IChemE The International Red Book.

<sup>45</sup> Sub-Clause 6.3, IChemE The International Red Book.

<sup>46</sup> While a 'physical condition' has not been defined, it is clarified that the contractor cannot claim for a weather condition.

<sup>47</sup> Clause 60.1(12), NEC4.

<sup>48</sup> [2014] BLR pp.488-489.

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In the Guidance Notes to the Red/Yellow Books, FIDIC has provided an alternative on the basis of the risk sharing, by which Sub-Clause 4.12(b) is replaced with a percentage allocation of Cost between the Contract Price and the Contractor respectively.

A much more thorough ongoing reallocation of ground risk (as part of Physical Conditions) is found in the FIDIC Silver Book.

Under Sub-Clause 4.12, the Contractor is 'deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Works' so that the Contractor 'accepts total responsibility for having foreseen all difficulties and costs of successfully completing the Works' and the effect is that no addition to the Contract Price is payable.

Generally, the Contractor under the Silver Book bears the risk of unforeseen ground conditions, covered by the expression 'Unforeseen difficulties'. However, two qualifications must be made.

First, the Employer is made responsible for certain data which it provides to the Contractor,<sup>49</sup> so that extension of time could be claimable for error in certain circumstances,<sup>50</sup> although there is no express entitlement to any additional payment.

Second, depending on the governing law selected by the parties, the effect of the provisions may be in doubt.<sup>51</sup> For example, strong reservations have been expressed<sup>52</sup> as to whether such transfer of risk to the Contractor is enforceable under German law in circumstances where the Employer has provided incorrect information on ground conditions.<sup>53</sup>

## Changing the risk allocation: the 2017 FIDIC Contracts

In the 2017 Red and Yellow Books, FIDIC has continued to provide a risk sharing alternative, by which substitute wording is inserted into Sub-Clause 4.12 allocating risk in relation to sub-surface conditions on a percentage basis. The Guidance<sup>54</sup> now recommends that, in order to assist the Engineer in agreeing or determining delay and/or cost in the event that the Contractor encounters adverse sub-surface conditions, the Employer 'may consider including the physical/geological/ sub-surface conditions that are known at the Base Date in the Contract — in the form of a 'Baseline Report'.

The re-allocation of ground risk in the 1999 Silver Book is preserved with identical wording in the 2017 Silver Book<sup>55</sup> on Unforeseeable Difficulties. As under the 1999 Silver Book, any qualifications must be made to the general principle that the Contractor bears the risk of unforeseen ground conditions.

## Force Majeure

### The 1999 FIDIC Contracts

The Force Majeure provisions<sup>56</sup> in the 1999 FIDIC forms of contract are essentially the same for the Red, Yellow and Silver Books.<sup>57</sup> 'Force Majeure' is defined<sup>58</sup> as 'an exceptional event or circumstance' which must be:

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<sup>49</sup> Sub-Clause 5.1.

<sup>50</sup> For commentary, see Ellis Baker et al. (op.cit.), p.92.

<sup>51</sup> Peter Fenn 'Review of international practice on the allocation of risk of ground conditions', *International Construction Law Review*, pp.439-453 (2000).

<sup>52</sup> Dr Alexander Kus, Dr Jochen Markus and Dr Ralf Steding 'FIDIC's new Silver Book under the German Standard Form Contract Act', *International Construction Law Review*, Vol 16 Part 4 pp.533-550 (1999).

<sup>53</sup> Axel-Volkmar Jaeger and Götz-Sebastian Hök (op.cit.), p.107, provides a commentary on the German law position in relation to these types of risk allocation.

<sup>54</sup> 2017 Red Book p.24, 2017 Yellow Book p.25.

<sup>55</sup> Sub-Clause 4.12.

<sup>56</sup> Clause 19.

<sup>57</sup> Jeremy Glover and Simon Hughes QC (op.cit.).

<sup>58</sup> Sub-Clause 19.1.



- beyond a Party's control;
- beyond reasonable provision by a Party before entering into the Contract;
- not reasonably capable of being avoided or overcome; and
- not substantially attributable to either Party.

A non-exhaustive list of possible 'exceptional events or circumstances' is given:

- war, hostilities, invasion, enemy action;
- rebellion, terrorism, insurrection, coup d'état or civil war;
- riots and other civil/industrial disorder;
- munitions, explosives, radiation or contamination (except as attributable to the Contractor); and
- natural catastrophes, such as earthquake, hurricane, typhoon or volcanic activity.

A party prevented from performing its contractual obligations<sup>59</sup> by a Force Majeure event must give notice to the other party within 14 days of when it became or should have become aware of it.<sup>60</sup> The party is excused performance of its obligations while prevented from doing so, and, in the case of the Contractor, may be entitled to further relief in the form of an extension of time and/or (in limited circumstances) additional payment.

## The 2017 FIDIC Contracts

The 2017 editions of the Red, Yellow and Silver Books have replaced the Force Majeure provisions in the 1999 editions with a new clause<sup>61</sup> entitled 'Exceptional Events'. However, this is a less profound change than the replacement of a Force Majeure clause would suggest since the 2017 definition of Exceptional Event is similar, though not identical, to the 1999 definition of Force Majeure. Apart from some re-drafting separating 'riot, commotion and disorder' from 'strike or lockout', the most notable change to the non-exclusive scope of the provision is the addition of 'tsunami' to the 'natural catastrophes' item.

Otherwise, the effect of the occurrence of an Exceptional Event under the 2017 forms likewise resembles the effect of a Force Majeure event under the 1999 forms; the procedures and consequences are similar, with some amendments to the drafting.

## Other standard contract forms

The ENAA form of contract incorporates a simpler definition of Force Majeure. It provides that Force Majeure shall mean 'any event beyond the reasonable control of the Owner or the Contractor, as the case may be, and which is unavoidable notwithstanding the reasonable care of the party affected'.<sup>62</sup> Unlike FIDIC, it does not need to be an 'exceptional event or circumstance'. The affected party is only entitled to an extension of time, but not any additional costs (except in certain cases)<sup>63</sup> and, in case of prolonged Force Majeure (i.e., an aggregate of more than 120 days), either party may terminate the contract by notice to the other.<sup>64</sup>

The NEC4 form adopts a different approach. Instead of including a separate Force Majeure regime, it provides for a compensation event that has a similar effect. Clause 60.1(19) allows the Contractor relief in case of a compensation event if it can demonstrate that it is something neither party could prevent, an experienced

<sup>59</sup> In the MDB (Pink) Book 'substantial obligations' rather than 'obligations'.

<sup>60</sup> Sub-Clause 19.2.

<sup>61</sup> Clause 18.

<sup>62</sup> Sub-Clause 37.1, ENAA Model Form International Contract for Power Plant Construction (2012 edition).

<sup>63</sup> Sub-Clause 37.3, ENAA Model Form International Contract for Power Plant Construction (2012 edition). See Sub-Clauses 32.2 (*Care of Works*), 38.3 and 38.4 (*War Risks*) for such exceptions.

<sup>64</sup> Sub-Clause 37.6, ENAA Model Form International Contract for Power Plant Construction (2012 edition).

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contractor would have judged to have such a small chance of occurring that it would have been unreasonable to have allowed for it and it is not covered under any of the other compensation events under the contract.<sup>65</sup>

## Change in Law

### The 1999 FIDIC Contracts

The 1999 FIDIC forms of contract provide that the contract price shall be adjusted to take account of any increase or decrease in cost resulting from a change in laws of the country in which the works are situated or in the judicial or official interpretation of the laws, made after the Base Date (being the date for the submission of the tender), which affect the Contractor's performance of obligations under the contract. In such a case the Contractor is entitled to claim for time and/or cost relief.

### The 2017 FIDIC Contracts

The 2017 edition of the FIDIC forms of contract expands the scope of the change in law provision such that any changes in the terms of any permits, permission, licence or approval or the requirement for a particular permit, permission, licence or approval to be obtained after the Base Date entitles the Contractor to relief. Conversely, if there is a decrease in cost due to a change in law, the Employer is entitled to make a claim under the contract for an adjustment to the contract price.

### Other standard contract forms

All other standard forms, other than the LOGIC contract form, allow the Contractor to claim both time and/or cost. The LOGIC contract form only allows for an adjustment to the contract price but not to the time for completion.<sup>66</sup>

NEC4 provides for a change in law provision, but it has only been included as a secondary option clause.<sup>67</sup> If the relevant option provision is incorporated, it provides that any change in law shall be a compensation event. It also provides that where the impact of a change in law is for the overall costs to decrease, the contract price shall be reduced to reflect such decrease.<sup>68</sup>

## Delay

### The 1999 FIDIC Contracts

The 1999 FIDIC forms of contract provide that a failure by the Contractor to meet the agreed time for completion shall entitle the Employer to claim liquidated damages for delay. Delay liquidated damages are the only damages applicable to the Contractor's delay in completing the works by the time for completion, but payment thereof does not relieve the Contractor from its obligation to complete the works in accordance with the contract.

### The 2017 FIDIC Contracts

The 2017 FIDIC forms of contract contain a very similar provision in relation to delay liquidated damages save that they provide that the liquidated damages provisions shall not limit the Contractor's liability for delay in case of fraud, gross negligence, deliberate default or reckless misconduct by the Contractor. Therefore, a contractor must not deliberately delay the works once it has reached the delay damages cap otherwise it risks uncapped liability.

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<sup>65</sup> Clause 60.1(19), NEC4.

<sup>66</sup> Clause 20.3, LOGIC.

<sup>67</sup> Option X2, NEC4.

<sup>68</sup> Option X2, NEC4.

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## Other standard contract forms

The ENAA, IChemE, NEC4 and LOGIC contract forms all provide for liquidated damages for delay in case of the Contractor's failure to meet the time for completion.<sup>69</sup> However, unlike the other forms, the IChemE and NEC4 forms do not expressly refer to payment of such damages as the sole and exclusive remedy of the Employer for such delay.

In addition, the NEC4 form expressly provides that if the completion date changes to a later date after the liquidated damages for delay have been paid, the Employer is to repay the overpayment of damages with interest.<sup>70</sup> Similarly, if the Employer takes over a part of the works before the completion date, the delay liquidated damages are reduced from the date on which the part is taken over, taking into account the benefit of earlier taking over of such part of the works.<sup>71</sup>

## Performance

### The 1999 FIDIC Contracts

The 1999 FIDIC forms of contract provide for two sets of tests in relation to the performance of the works: tests on completion and tests after completion. The tests on completion are to be carried out in the following sequence: pre-commissioning tests, commissioning tests and trial operation. Following trial operation, performance testing (if any) shall take place to demonstrate whether the works comply with the performance guarantees.

If the works fail the tests on completion (i.e. at all or fail to achieve the minimum levels of performance, if specified), the Employer shall be entitled to order further repetition of tests, reject the works if the failure deprives the Employer of substantially the whole benefit of the works or issue a taking-over certificate. If the Employer decides to take-over the works, it shall be entitled to reduce the contract price by such amount as shall be appropriate taking into account the reduced value of the works as a result of the failure.

In addition, the 1999 FIDIC forms of contract provide for tests after completion (if specified). A failure of tests after completion is deemed to constitute a pass, where 'the relevant sum payable as non-performance damages' stated in the contract is paid by the Contractor.

### The 2017 FIDIC Contracts

The 2017 FIDIC forms of contract have refined the concept of performance liquidated damages. It is to be noted that in most contracts where performance parameters need to be measured and specific levels achieved in order for taking over to occur (typically power projects and process plants), these types of provisions are already added to the FIDIC clauses. Indeed, participants in such sectors will likely have forms of wording with which they are already comfortable, and that are often more intricate than the new drafting proposed in the Silver Book.

## Other standard contract forms

Other standard forms also provide for the application of performance liquidated damages.<sup>72</sup>

Given the nature of power plant construction works, the ENAA form contains guaranteed performance levels as well as minimum levels that need to be met.<sup>73</sup> If the minimum performance levels are not met, the Contractor has an obligation to make good the shortfall and repeat the performance tests. If the minimum levels are met, but the guaranteed levels are not met, the Contractor may, at its option, either remedy such shortfall and repeat the performance tests or pay performance liquidated damages. The ENAA form does not, however, contain a right for the Employer to reject the plant.

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<sup>69</sup> Clause 26, ENAA, Clause 15, IChemE, Option X7, NEC4, Clause 35, LOGIC.

<sup>70</sup> Option X7.2, NEC4.

<sup>71</sup> Option X7.3, NEC4.

<sup>72</sup> Sub-Clause 28.3(b), ENAA, Sub-Clause 35.9 IChemE, Option X17, NEC4, Clause 35, LOGIC.

<sup>73</sup> Clause 28, ENAA.

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The IChemE form provides for a performance test period during which the performance tests are to be carried out.<sup>74</sup> If the plant fails to pass any performance tests or if any performance test is stopped before its completion, the Employer shall permit the Contractor to make any adjustment and/or modification to the plant at the Contractor's cost before the repetition of any performance test (subject to Employer's prior approval of the same) and shall, if the Contractor reasonably requires, shut down any relevant part of the plant and restart it following any adjustment and/or modification.<sup>75</sup>

If, by the end of the performance test period, the plant has failed any performance tests and the results are within any limit for the application of liquidated damages, the Contractor shall pay performance liquidated damages to the Employer.<sup>76</sup> However, if the results remain outside the limits by the end of the performance test period, the Contractor shall compensate the Employer for such failure to comply with the relevant guarantees.<sup>77</sup> In the event that any performance test(s) has or have not been completed by the end of the defects liability period due to a reason that is not the responsibility of the Contractor, the relevant performance test(s) shall be deemed to have been passed.<sup>78</sup>

## Indemnities

### The 1999 FIDIC Contracts

In the 1999 FIDIC suite of contracts, Clause 17 uses indemnities as the medium for risk allocation on a range of issues. The net effect is relatively complex. Indemnities are given by both Employer and Contractor and some but not all of them are reciprocal. For example, in relation to third party claims, the Contractor gives an indemnity to the Employer for personal harm and damage to property arising out of activities or personnel for which it is responsible and the Employer gives a similar, though not identical, indemnity to the Contractor.<sup>79</sup>

More of Clause 17 is devoted to obligations of the Contractor, including responsibility for Care of the Works,<sup>80</sup> which has no equivalent in the case of the Employer. The Contractor is liable for loss or damage during the period from the Commencement Date to the issue of the Taking Over Certificate, except where the cause thereof is classified as an Employer's Risk.<sup>81</sup> However, it would be an over-simplification to say that the indemnity provisions under the FIDIC forms of contract favour the Employer. Wherever loss or damage to the Works results from an Employer's Risk, the Contractor may be able to claim an extension of time for delay and/or additional cost.<sup>82</sup>

There are also some differences between the various forms of FIDIC contract. While all forms include as an Employer's Risk foreign hostilities, civil conflict, riots/disorder, explosions/ contaminations/radiation and sonic damage by aircraft,<sup>83</sup> the Silver Book significantly omits three categories of Employer Risks found in the Red and Yellow Books<sup>84</sup> namely, use or occupation of the works by the Employer, design of any part of the Works by personnel for whom the Employer is responsible and 'Unforeseeable<sup>85</sup> operation of forces of nature'. The MDB version of the Red Book adds to the first paragraph of Sub-Clause 17.3 the words 'insofar as they directly affect the execution of the Works in the Country'. When compared with the Red Book itself, 'the effect of this is to narrow further the nature of the 'Employer Risks'.<sup>86</sup>

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<sup>74</sup> Sub-clause 35.4, IChemE

<sup>75</sup> Sub-clause 35.7, IChemE.

<sup>76</sup> Sub-clause 35.9, IChemE.

<sup>77</sup> Sub-clause 35.10, IChemE.

<sup>78</sup> Sub-clause 35.14, IChemE.

<sup>79</sup> Sub-Clause 17.1.

<sup>80</sup> Sub-Clause 17.2.

<sup>81</sup> Sub-Clause 17.3.

<sup>82</sup> Sub-Clause 17.4.

<sup>83</sup> Sub-Clause 17.3.

<sup>84</sup> See Ellis Baker et al. (op.cit.), p.346.

<sup>85</sup> Defined by Sub-Clause 1.1.6.8 as 'not reasonably foreseeable by an experienced contractor by the date for submission of the Tender'.

<sup>86</sup> Jeremy Glover and Simon Hughes QC (op.cit.), p.342.

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Much of the remaining indemnities and related provisions can be regarded as fairly balanced in terms of risk allocation. The indemnities for infringement of intellectual property rights<sup>87</sup> are essentially reciprocal. The exclusion of liability for 'any indirect or consequential loss'<sup>88</sup> also applies to both parties. There is provision for the Contractor's total liability to be limited to a stated amount; the amount is the subject of express provision, usually included in the Particular Conditions following negotiation.

## The 2017 FIDIC Contracts

It was assumed by some observers that the 2017 FIDIC forms of contract would follow the approach of the Gold Book in risk allocation, and this expectation was to some extent encouraged by FIDIC in the pre-release editions of the Yellow Book.<sup>89</sup> Under the Gold Book, all risks were allocated between the parties (though differentiating between design-build period risks and operation service period risks) with distinctions made between Employer's Commercial Risks, Employer's Risks of Damage<sup>90</sup> and Contractor's Risks.<sup>91</sup>

In the result, the 2017 FIDIC forms of contract did not follow the Gold Book approach. Instead, there was substantial reworking in the form of a new care of the works and indemnities clause,<sup>92</sup> which embodies traditional care-of-the-works obligations making the Contractor fully responsible for the Works, subject to exceptions expressly set out.<sup>93</sup> Employer's Risks are no longer listed as they were in the 1999 FIDIC forms of contract,<sup>94</sup> and the carve-outs from the Contractor's liability for care of the works<sup>95</sup> are expressed as:

- interference with property rights as the unavoidable result of the execution of the Works in accordance with the Contract;
- use or occupation by the Employer of any part of the Permanent Works;
- faults in design of the Works undertaken by the Employer;
- unforeseeable operation of 'the forces of nature';
- Exceptional Events;<sup>96</sup> and
- acts or defaults by the Employer's Personnel or other contractors of the Employer.

Although some of the distinctions between the respective FIDIC 1999 editions no longer remain, there are still divergences arising from the different procurement models. Thus the exception to the Contractor's liability for care of the works due to faults in design of the works undertaken by the Employer is expressed as:

- 'any element of the design of the Works by the Employer or which may be contained in the Specifications and Drawings (Red Book)/Employer's Requirements (Yellow Book)' which an experienced contractor exercising due care would not have discovered before submitting the Tender (Red and Yellow Books); or
- 'any element of the design of the Works by the Employer' (Silver Book).

In particular, the 2017 Yellow and Silver Books now feature a substantial strengthening of the Contractor's design obligations and liabilities using indemnity provisions, so that the Contractor indemnifies the Employer against all 'acts, errors or omissions' in carrying out the Contractor's design obligations resulting in the Works 'not being fit for the purpose(s) for which they are intended'.<sup>97</sup> The 2017 Red Book equivalent applies '[t]o the

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<sup>87</sup> Sub-Clause 17.5.

<sup>88</sup> Sub-Clause 17.6.

<sup>89</sup> Distributed in London December 2016 and in Abu Dhabi in February 2017.

<sup>90</sup> Sub-Clause 17.1.

<sup>91</sup> Sub-Clause 17.2.

<sup>92</sup> Clause 17.

<sup>93</sup> Sub-Clause 17.2.

<sup>94</sup> Sub-Clause 17.3.

<sup>95</sup> Sub-Clause 17.2.

<sup>96</sup> Clause 18. See above.

<sup>97</sup> Sub-Clause 17.4, 2017 Yellow and Silver Books.

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extent, if any, that the Contractor is responsible for the design of part of the Permanent Works<sup>98</sup> which is intended to refer to the situation where a Particular Condition allocates an element or elements of the design to the Contractor.<sup>99</sup>

Although the 1999 Yellow and Silver Books, and to a very limited extent the 1999 Red Book, contained fitness for purpose obligations in respect of design, none was underpinned by an indemnity on the part of the Contractor to the Employer in respect of any breaches of that obligation. In this respect, the 2017 editions of the FIDIC contract can be said to represent a re-balancing of risk allocation in favour of the Employer.

## Other standard contract forms

Given that the LOGIC forms of contract are drafted mainly to be used for offshore works, the indemnity regime is based on 'knock-for-knock' indemnities.<sup>100</sup> In its simplest form, under a knock-for-knock indemnity each party to a contract agrees to bear responsibility for and indemnify the other in respect of loss of or damage to their and their group's (which would include their contractors and subcontractors) property and injury to or death of their and their group's employees regardless of fault. These cross-indemnities are usually intended to be effective even if the losses arise due to negligence, breach of statutory duty or breach of contract. In light of the nature of the works and the potential extent of pollution related liabilities, for example, the LOGIC form carves out pollution related liability from the knock-for-knock indemnities. Instead, the Employer indemnifies the Contractor in relation to any pollution emanating from the reservoir or from the property of the employer group and the Contractor indemnifies the Employer in relation to any pollution emanating from the premises, property or equipment of the Contractor group.<sup>101</sup>

The knock-for-knock indemnities also do not extend to any third party liability, which is dealt by way of a fault-based approach.<sup>102</sup>

The NEC4 form takes the approach of replacing indemnities with liabilities for costs and definitively setting out the risks that the Contractor and the Employer assume.<sup>103</sup> The parties will need to be careful in particular when using these provisions to ensure there are no risks that do not clearly fall on either the Contractor's or the Employer's list of risks.

## Insurance

### The 1999 FIDIC Contracts

The insurances to be effected under the 1999 FIDIC forms of contract are against loss or damage to Works and Contractor's Equipment,<sup>104</sup> personal injury and damage to property of third parties<sup>105</sup> and personal injury to the Contractor's Personnel.<sup>106</sup>

What cover is actually obtained will depend to some extent on what is available in the market and at what cost. However, the insuring party, whether Contractor or Employer, must insure against loss or damage to Works and Goods 'for not less than the full reinstatement cost including the costs of demolition, removal of debris and professional fees and profit'.

The required scope of this cover needs to be seen in conjunction with the Employer's Risk provisions, which, as indicated above, 'shall cover all loss and damage from any cause not listed in Sub-Clause 17.3'.<sup>107</sup>

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<sup>98</sup> Sub-Clause 17.4, 2017 Red Book.

<sup>99</sup> Sometimes referred to in the UK as the Contractor's Design Portion from the JCT equivalent provision.

<sup>100</sup> Clause 21.

<sup>101</sup> Sub-Clauses 21.3 and 21.4.

<sup>102</sup> Sub-clauses 21.1(c) and 21.2(c).

<sup>103</sup> Sub-Clauses 80.1 and 81.1.

<sup>104</sup> Sub-Clause 18.2.

<sup>105</sup> Sub-Clause 18.3.

<sup>106</sup> Sub-Clause 18.4.

<sup>107</sup> Sub-Clause 18.2(c).

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Insurance for Contractor's Equipment<sup>108</sup> has to be for 'not less than the full replacement value, including delivery to Site'.

The required scope of the insurance against personal injury and damage to property of third parties is also defined by reference to Sub-Clause 17.3, it being permissible to exclude liability to the extent that it arises from 'a cause listed in Sub-Clause 17.3 [Employer's Risks], except to the extent that cover is available at commercially reasonable terms'.<sup>109</sup>

## The 2017 FIDIC Contracts

In the 2017 editions, the General Conditions<sup>110</sup> simply provide for insurance to be provided by the Contractor (although this could be varied by a Particular Condition). The scope of the cover contemplated has been expanded as compared to the 1999 editions. There is still the obligation to cover the Works,<sup>111</sup> Goods,<sup>112</sup> against injury to persons and damage to property<sup>113</sup> and injury to employees.<sup>114</sup> To these have been added<sup>115</sup> 'all other insurances required by the Laws of the countries where (any part of) the Works are being carried out' and '[o]ther insurances required by local practice (if any) shall be detailed in the Contract Data'.

The most important addition, however, is the requirement that the Contractor's indemnity in respect of breach of its fitness for purpose obligation to the Employer in relation to design of the Works shall be covered by professional indemnity insurance if required by the Contract Data.<sup>116</sup>

## Other standard contract forms

Given the offshore nature of the works covered by the LOGIC forms, there are specific insurances that are required to be taken out by the Contractor, including Marine Hull and Machinery insurance in respect of all vessels used by the contractor group in the performance of the works and Protection and Indemnity insurance including wreck and debris removal and oil pollution liability in respect of all vessels or floating equipment owned, leased or hired by the contractor group in relation to the performance of the works.<sup>117</sup> The Construction All Risks (CAR) insurance is to be taken out by the Employer but any deductible to paid under such insurance shall be the Contractor's responsibility.<sup>118</sup>

Under the IChemE form, the Employer is responsible for procuring insurance for all risks relating to the plant, site materials and temporary works in joint names of the Employer, Project Manager, Contractor and Subcontractors. While the insurance shall cover physical damage by defective design, it shall (in line with typical practice) exclude the cost of rectifying any defect.<sup>119</sup> The Contractor is required to procure insurance covering contractor's equipment,<sup>120</sup> third-party liability insurance,<sup>121</sup> and Employer's liability insurance.<sup>122</sup> The Contractor is not specifically required to maintain any professional indemnity insurance.<sup>123</sup>

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<sup>108</sup> Defined in Sub-Clause 1.1.5.1.

<sup>109</sup> Sub-Clause 18.3(d)(iii).

<sup>110</sup> Sub-Clause 19.2.

<sup>111</sup> Sub-Clause 19.2.1.

<sup>112</sup> Sub-Clause 19.2.2.

<sup>113</sup> Sub-Clause 19.2.4.

<sup>114</sup> Sub-Clause 19.2.5.

<sup>115</sup> Sub-Clause 19.2.6.

<sup>116</sup> Sub-Clause 19.2.3.

<sup>117</sup> Sub-Clause 22.2.

<sup>118</sup> Sub-Clause 23.3.

<sup>119</sup> Sub-Clause 31.1.

<sup>120</sup> Sub-Clause 31.2(b).

<sup>121</sup> Sub-Clause 31.2(c).

<sup>122</sup> Sub-Clause 31.2(a).

<sup>123</sup> Sub-Clause 31.2.

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## The allocation of risks in a construction project - summary

Accurate identification and fair and equitable allocation of risks are essential to ensuring the successful delivery of a project. Both the employer and the contractor should work co-operatively to seek an equitable sharing of risk based on an appropriate procurement methodology and to allocate typical risks in an efficient manner, in the light of the nature of the particular project and its specific considerations with the intention that the potential for frustration of the project schedule and the incidence of construction disputes will be reduced to the benefit of all parties.

The FIDIC forms of contract have long been 'international benchmarks' in terms of risk allocation. However, these vary notably between the different procurement methods offered by the 1999 FIDIC suite. If the Red and Yellow Books are reckoned to offer a more 'balanced' risk allocation, the Silver Book places significantly more risk on the Contractor. In any event, the risk allocation in the FIDIC General Conditions can be further modified by the use of Particular Conditions.

The 2017 editions of the FIDIC forms of contract broadly maintain the distinctive procurement models in the Red, Yellow and Silver Books, respectively. The risk allocation in the Red and Yellow Books on the one hand is more balanced and in the Silver Book more onerous for the Contractor, as before. However, and despite the weight of Golden Principle 3<sup>124</sup> in favour of stability in reward/risk allocation in FIDIC forms, the new editions have introduced significant adjustments which will require careful evaluation before they are used.

The other standard forms, such as ENAA, IChemE and LOGIC, are generally targeted towards specific types of works or industries. They are also similar to FIDIC in the way they are structured and drafted. The NEC4 form stands out as being truly different and was updated to target more international use. While the usage of the NEC4 form grows, FIDIC continues to remain the most widely used standard form contract internationally.

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<sup>124</sup> On the new Golden Principles, released with the 2017 editions, see Chapter 3 above.