

## Design risk under FIDIC contracts: Navigating responsibilities and liabilities

Written by Jo Clarke

### Introduction

The allocation of design risk is an important consideration for parties to construction contracts. Misunderstanding or misallocation of design risk can lead to significant time and cost overruns and ultimately to expensive disputes. This article explores how design risk is allocated under the FIDIC forms of contract and suggests practical strategies by which parties may mitigate design risk.

### What is design risk and why is its allocation important?

Design risk refers to the responsibility for, and potential liability associated with the adequacy, accuracy, and completeness of the design for the works. It is about which party bears the consequences if the design is flawed in some way – because it is immature (insufficiently progressed), outdated (no longer matches the reality on site, or current regulatory requirements, or market realities), defective, fails to meet the required standards (legal, regulatory or contractual), or not appropriate because it relates to new technology which is insufficiently tested.

Design risk in construction contracts can be allocated in several ways. In traditional construction contracts, where there are separate contracts for the design of the works and the construction of those works, the Employer often provides the design and bears most of the design risk. In design and build contracts, in which the Contractor takes on both design and construction responsibilities, the Contractor usually bears the design risk.

The starting point for managing design risk is precision and clarity on the end product. The employer should provide sufficient detail in the design (in the case of a traditional construction contract) or the employer's requirements (in the case of a design and build or EPC/turnkey contract) to ensure this. In a design and build or EPC/turnkey contract, it may feel counter-intuitive for an employer to spend time and money preparing detailed employer's requirements when it



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will be paying a contractor to prepare the design. However, if the employer fails to provide sufficient clarity and precision about the end product, the contractor will be at liberty to make decisions (including choosing the cheapest options) which may not reflect the employer's wishes. There will be significant scope for disputes about what the employer required and whether the contractor provided that.

### FIDIC Red Book: Traditional construction contract with Employer's design

The Red Book is a traditional construction contract in which the Employer provides a detailed design to the Contractor and the Contractor executes the works according to that design. The Employer provides the detailed design in the Specification and Drawings. The Contractor's design obligations are limited but not absent.

In the 1999 edition, pursuant to Sub-Clause 1.8, the Contractor has a duty to notify the Employer if it becomes aware of an error or defect of a technical nature in documents prepared for use in execution of the works but is not required actively to search for them. Pursuant to Sub-Clause 4.1, the Contractor must



design (to the extent specified), execute, and complete the Works in a proper workmanlike manner. This is noteworthy because, even though the Red Book is a traditional construction contract in which the Employer provides the design, there is express scope for the Employer to require the Contractor to design the Works to whatever extent may be specified. The Contractor under a Red Book contract also has to carry out detailed design such as shop and working drawings. The degree of detail provided by the Employer/Engineer varies from country to country and sector to sector.

Sub-Clause 4.1 also provides that if the Contract does specify that the Contractor shall design part of the Permanent Works, those Works when completed shall be *'fit for such purposes for which the part is intended as are specified in the Contract'*. This means that if part of the Works is designed by the Contractor but it is not fit for its intended purposes, the Contractor will be liable, even if that part otherwise complies with the Employer's Requirements and even if the Contractor otherwise acted like a competent professional. It is obviously essential that the purposes of the Works are carefully described in the Contract and that the Contractor is fully aware of this high standard and takes legal advice before agreeing to it.<sup>1</sup>

Pursuant to Sub-Clause 7.1, the Contractor is required to execute the Works, including any design if specified, in a proper and workmanlike manner and in accordance with recognised good practice.

### FIDIC Yellow Book: Design and build

The Yellow Book is a design and build contract. The Employer provides its requirements for the end product in the Employer's Requirements. The Contractor assumes significant design responsibility.

In the 1999 edition, pursuant to Sub-Clause 5.1, the Contractor is responsible for the design and must use qualified designers who are engineers or other professionals who comply with the criteria (if any) in the Employer's Requirements.

The Contractor is also required to scrutinise the Employer's Requirements for errors. This is a positive obligation which is greater than the obligation in the Red Book to notify if the Contractor becomes aware of

any technical errors.

The Contractor is required to scrutinise at two points in time. First, before submission of the Letter of Tender. This is in accordance with the form of Letter of Tender which provides that the Contractor has *'examined, understood and checked'* the Employer's Requirements and *'ascertained that they contain no errors or defects'*. Second, after the Commencement Date, within the period stated in the Appendix to Tender. This is in accordance with Sub-Clause 5.1, pursuant to which the Contractor is required to give notice if it finds any error, fault or other defect in the Employer's Requirements within this period.

If the Contractor gives notice of an error under Sub-Clause 5.1, the Engineer is required to determine whether a Variation is necessary (i.e., to correct the error). The Contractor will not be entitled to additional time or an adjustment of the Contract Price to the extent that *'taking account of cost and time ... an experienced contractor exercising due care'* would have discovered the error when examining the Employer's Requirements before submitting the Tender.

If the Contractor does not discover an error in the Employer's Requirements within the period prescribed by Sub-Clause 5.1 but, subsequently, suffers delay and/or incurs Cost as a result of an error in the Employer's Requirements, the consequences are set out in Sub-Clause 1.9. These are that if an experienced contractor exercising due care would not have discovered the error when scrutinising the Employer's Requirements under Sub-Clause 5.1, the Contractor shall (subject to giving notices) be entitled to additional time and/or Cost plus profit.

A shorthand for this is perhaps: a patent error in the Employer's Requirements is the Contractor's risk whereas a latent error in the Employer's Requirements is the Employer's risk. The optimum scenario is obviously no errors in the Employer's Requirements, failing which for the Contractor to discover errors before submitting the Letter of Tender.

Pursuant to Sub-Clause 4.1, the Works must be fit for the purposes defined in the Contract, which may be a problem because parties do not define the purpose of every element in a project. An amendment in the 2017

<sup>1</sup> Much has been written about the English case *MT Højgaard A/S v E.ON Climate & Renewables UK Robin Rigg East Limited* [2017] UKSC 59, in which the English Supreme Court found that a fitness for purpose obligation took precedence, even though the Contractor had followed the Employer's

requirements by designing in accordance with a specified international standard. See for example Joanne Clarke and Andrew Tweeddale, *'Design obligations in design-build contracts – recurring issues'*, [2019] ICLR 484.



editions is intended to address this (discussed below).

## FIDIC Silver Book: EPC/Turnkey

The Silver Book is an EPC contract. It imposes onerous obligations on the Contractor in terms of design risk. In the Silver Book, the Employer provides its requirements for the end product in the Employer's Requirements. In the 1999 edition, the Contractor is responsible not only for the design of the Works (Sub-Clause 4.1) which shall be fit for the purposes for which the Works are intended as defined in the Contract (Sub-Clause 4.1) but also for the accuracy of the Employer's Requirements (Sub-Clause 5.1) with only narrow exceptions (for example, data which is expressly stated to be the Employer's responsibility). This onerous allocation of design risk to the Contractor reflects the turnkey nature of the contract. It gives the Employer price certainty, but this will come at a cost because the Contractor will price for this risk.

## Tools to manage design risk

In addition to careful consideration of the allocation of design risk, other provisions may be included within the contract to help distribute the financial consequences of a flawed design. In the 1999 FIDIC forms, these include Sub-Clause 17.1 which requires the Contractor to indemnify the Employer in respect of damage to people or property arising from design errors and Sub-Clause 17.6 which excludes or caps at a stated financial limit the Contractor's liability for certain types of loss or damage (except in case of fraud, deliberate default or reckless misconduct by the defaulting party). These may also include a requirement for the Contractor to take out professional indemnity insurance in respect of its design obligations – although a provision to this effect is not included in the FIDIC conditions it may, if required, be included in the particular conditions.

## Evolution in 2017 editions and 2022 reprints (Yellow Book)

Updates by FIDIC in the 2017 editions and the 2022 reprints reinforce the Contractor's obligations, particularly under the Yellow Book.

Sub-Clause 5.1 contains more precise criteria for the qualifications of the Contractor's designers, who must be qualified, experienced and competent in the disciplines of the design for which they are responsible

and qualified and entitled under the applicable Laws to design the Works.

The description of 'purpose' in the fitness for purpose obligation in Sub-Clause 4.1 is tightened and clarified, so that when completed *'the Works (or Section or Part or major item of Plant, if any) shall be fit for the purpose(s) for which they are intended, as defined and described in the Employer's Requirements (or, where no purpose(s) are so defined and described, fit for their ordinary purpose(s))'*. This links with the definition of 'Employer's Requirements' in Sub-Clause 1.1.33 which is amended to make it more obvious that these should describe the purpose(s) for which the Works are intended.

The process for scrutiny by the Contractor of the Employer's Requirements under Sub-Clause 1.9 and Sub-Clause 5.1 is consolidated and clarified as regards the time periods for scrutiny, the notices which the Contractor is required to give, and the process to be followed by the Engineer when notified by the Contractor of a possible error.

A new provision appears in Sub-Clause 17.4, by which the Contractor shall indemnify the Employer against acts, errors or omissions by the Contractor in carrying out the Contractor's design obligations that result in the Works (or Section or Part or major item of Plant, if any) when complete, not being fit for the purpose(s) for which they are intended under Sub-Clause 4.1.

Overall, the purpose of these (and other related) changes is to reduce ambiguity and strengthen accountability.

## Summary of design risk allocation in FIDIC

### Who prepares the design?

- Red Book: The Employer and/or the Contractor if so specified.
- Yellow Book: The Contractor, with the Employer providing Employer's Requirements.
- Silver Book: The Contractor.

### Who bears the risk of design errors?

- Red Book: The Employer for its design; the Contractor for its design (if any).



- Yellow Book: The Contractor, except for latent errors in the Employer's Requirements.
- Silver Book: The Contractor.

## Practical strategies to mitigate design risk

There are various strategies which parties to FIDIC contracts may consider to mitigate design risk, including the following.

### Employers

- Provide clear, detailed and precise Employer's Requirements. Avoid vague phrases and instead define measurable criteria (for example, material grades, performance benchmarks).
- Engage experienced design consultants. Tender documents should be reviewed and updated by independent experts, before they are issued, to identify any potential gaps or inconsistencies.
- Allocate risk transparently. Particular Conditions can be used to clarify design responsibilities and include realistic caps on liability to attract competitive bids.
- Consider professional indemnity insurance requirements. If the Contractor has significant design responsibility, the Employer should carefully specify the insurance cover required.

### Contractors

- Scrutinise the Employer's Requirements thoroughly. Failure to identify errors before tender submission will leave a Contractor exposed. The Contractor should allocate sufficient time and resources for review.
- Clarify the fitness for purpose obligations. This may include negotiating precise definitions of 'purpose' within the contract to avoid overly broad interpretations that increase liability.
- Invest in qualified design teams. The Contractor should ensure that its designers meet contractual and industry standards and document their qualifications and experience to demonstrate compliance.
- Secure adequate insurance and limitations of

liability. Professional indemnity insurance is essential for contracts with significant design obligations (such as design and build or EPC contracts). The Contractor should also seek to negotiate contractual exclusions and limitations of liability to manage its exposure to risk.

- Document all communications and assumptions. The Contractor should maintain a clear audit trail of any queries, clarifications, and approvals to give it the best possible position in any future disputes.

### Joint strategies

- Early risk workshops. The parties may wish to conduct early sessions to identify design risks and agree on mitigation measures before contract execution.
- Regular design reviews. The parties may wish to conduct regular and structured joint reviews of the design, to catch errors early.
- Dispute Avoidance/Adjudication Boards: FIDIC contracts include provisions for the appointment of a dispute board and there is a body of research which supports the idea that a standing board will often be able to resolve issues arising between the parties promptly, so preventing escalation to a formal dispute.

## Conclusion

Design risk under FIDIC contracts is a complex but crucial issue. The Employer should provide clear, detailed and precise requirements for the end product and the Contractor should ensure that it fully understands the extent of its obligations, particularly in relation to scrutiny of any design provided by the Employer and fitness for purpose of the end product. The fundamental principle remains that clarity from the outset regarding the end product is the best defence against costly disputes.

**We would be interested to hear what you think.**

**Please get in touch at**

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