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A COMPARATIVE ANALYSIS OF RISKS ADOPTED BY EMPLOYERS IN CONSTRUCTION CONTRACTS IN SOUTH AFRICA

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A research report submitted to the Faculty of Engineering and the Built Environment, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master of Science in Building – Project Management in Construction.

Johannesburg, 2021

DECLARATION

I declare that this research report is my own unaided work, except where I have explicitly indicated otherwise. I have followed the required conventions in referencing the thoughts and ideas of others. It is being submitted in part fulfilment to the Degree of Master of Science to the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination to any other University.



_____

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Student number: 1272638

1 June 2021

"Never regard study as a duty but as an enviable opportunity to learn to know the liberating influence of beauty in the realm of the spirit for your own personal joy and to the profit of the community to which your later works belong." Albert Einstein

ABSTRACT

Construction projects are unique and temporary endeavours that are risky in their very nature; however, standard form construction contracts endeavour to apportion risk evenly between the contracting parties. Such risk can be managed, minimised, shared, transferred or accepted; however, it cannot be ignored. The purpose of this research report was to determine from and compare between the three most commonly used building construction contracts in South Africa, those being the JBCC PBA 6.2, NEC4 ECC and FIDIC Red Book 2017 what the risks to the Employer are, resulting from: its own mandatory obligations, the Project Manager's mandatory obligations; as well as risks related to the provision of health and safety, the environment and quality provisions in the contracts in question. Based on limited critical review of the contracts, as well as legal commentaries on the contracts, it was found that the study was generally too broad to draw a like-for-like comparison between the contracts in question; however, certain comparisons were able to be drawn. The contracts share similar main employer obligations, but the quantum of obligations differ, where the FIDIC Red Book 2017 requires the highest level of action from the Employer. The contracts share similar main Project Manager / Principal Agent / the Engineer obligations, but the quantum of obligations differ, where the FIDIC Red Book 2017 requires the highest level of action from the Employer. Compared to the other contracts, the JBCC PBA 6.2 does not rely on the Principal Agent to act in a collaborative effort to eliminate risk. Both the NEC4 ECC and FIDIC Red Book 2017 make good provision for Health and Safety, Environment and Quality management, whereas the JBCC PBA 6.2 unfortunately does not make any express provision for this.

It is recommended that any construction project Employer do a thorough analysis of their contracting strategy as well as to do a detailed study of whether it will be able to meet all of the mandatory obligations related to the contracting strategy and standard form contract in question. Lastly, the Employer has to ensure that a competent main agent is employed to act on its behalf, so as to ensure the meeting of mandatory obligations (which results in risk management) as well as to ensure that the main agent is measured against its performance in terms of the mandatory obligations in the contract.

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LIST OF ACRONYMS

The following is a summary of common acronyms that are found in this research report:

BOQ –	Bills of Quantities;
CIDB –	Construction Industry Development Board;
DAAB –	Dispute Avoidance/Adjudication Board;
ECC –	Engineering and Construction Contract (as issued by the NEC);
EOT –	Extension of Time;
FIDIC –	Féderation Internationale des Ingénieurs-Counseils, the International Federation of Consulting Engineers;
IPC –	Interim Payment Certificate;
JBCC –	Joint Buildings Contracts Committee;
NEC –	New Engineering Contract;
NEC4 –	New Engineering Contract, 4th Edition;
N/S –	Nominated / Selected (as in Nominated / Selected Subcontract pertaining to the JBCC PBA);
PBA –	Principal Building Agreement (as issued by the JBCC);
PWDD -	Price for Work Done to Date (in accordance with the NEC4).

CORE TERMS

The following is a list of definitions for core terms used in the research report:

Acceptance:

The acceptance is an unqualified declaration of intent made by the offeree, approving the offer without reservation.

Action:

The fact or process of doing something, typically to achieve an aim (Oxford University, 2019).

Bills of Quantities:

The document which is a detailed statement of the work, materials, prices, dimensions and other details for the construction of the work, specifically for use in re-measurable contracts (Bowmans, n.d.).

Conditions:

A provision making the effect of a legal instrument contingent upon an uncertain event (Mirriam-Webster, 2019).

Contract:

An agreement between two or more parties, with the core intention of being both legally binding and enforceable (O'Connor, 2017).

Contractor:

The company providing the works (Mason, 2016); either doing the work themselves or by hiring and supervising subcontractors to help with the work (legaldictionary.net, 2016).

Construction Contract:

Construction contracts establish the legal relationship between parties, the allocation of risk, the obligations, liabilities and benefit (O'Connor, 2017).

Construction Industry:

That sector of national economy engaged in preparation of land and construction, alteration, and repair of buildings, structures, and other real property (BusinessDictionary, 2019).

Discretionary Obligation:

Something that could be done by a party if they feel it is appropriate to be done, but do not risk losing anything if it is not done (Rowlinson, 2011).

Employer:

The client or buyer of construction services (Mason, 2016).

Mandatory Obligation:

Something that must be done in order for a right to be created for one party and (or) an obligation for another party (Rowlinson, 2011).

Offer:

In the use of the law of contract is identifiable as being accompanied by the intention of putting the conclusion of the negotiations out of one's further power and enabling the offeree, by mere acceptance, to create the contract.

Preliminaries:

A similarly named section of the Bills of Quantities (BOQ) that contains items that are of a general nature that may affect the contractor's tender (Cartlidge, 2017), but that do not form part of the completed works (O'Connor, 2017).

Programme:

A representation of the tasks that are required to be performed in order for the works to be completed with the period stated in the contract.

Risk:

The probability of an event to occur with the potential of losses incurred (Lam, et al., 2007) (Klee, 2015)**.**

Terms:

Provisions that determine the nature and scope of an agreement (Mirriam-Webster, 2019).

Works:

The whole of the temporary and permanent work to be undertaken by the contractor, as so described in the contract (The Joint Buildings Contracts Committee (JBCC), 2018) (International Federation of Consulting Engineers (FIDIC), 2017).

1 INTRODUCTION

1.1 General introduction

Construction is a risky business, especially so in the current economic climate locally, with South Africa facing an ailing economy (Matsangou, 2019). Although the construction industry is a major contributor to both growth and employment locally (Bowmans, n.d.), it is unfortunately also facing major challenges and decline since 2009 (PricewaterhouseCoopers (PWC), 2016), the allocation of risk will ultimately determine whether construction projects are successful in delivering projects within their objectives with those being: on time and within the allocated budget, while doing so safely and with good quality (Prinsloo & Maritz, 2016) (Watermeyer, 2012), with the end goal being that of economic growth and job creation.

1.1.1 Risk and contracting

"…there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns—the ones we don't know we don't know…" Donald Rumsfeld

Over time construction projects have continued to develop and have become more complex than ever before, owing to increased pressure on timelines, advancement of technology generally and more specifically building information modelling and an ever-increasing scarcity of resources.

Construction projects are temporary and unique endeavours undertaken to create an end product (Project Management Institute, Inc., 2008) (in the case of construction a new or refurbished construction project, a new piece of infrastructure, etc. (Cartlidge, 2015)), with each project being concluded under a contract; which as with all human endeavour involves risk (Peckiene, et al., 2013) (Thompson & Perry, 2003 reprint).

Latham (1994) argues that no project is risk free, with the risk events caused by either humans or natural elements (Klee, 2015). A key concept generally and specifically in construction contracts is that "*risk can be managed, minimised, shared, transferred or accepted. It cannot be ignored*" (Latham, 1994) (Lam, et al., 2007). Contracts inherently allocate risks, with international contracts allocating most standard risks based on the most common problems (Klee, 2015), with a fair allocation of risk (O'Connor, 2017).

Risks adopted by the different parties are not equal in the different contracting strategies, as such the Employer through its Project Manager needs to carefully consider the allocation of risk in order to ensure successful project delivery. Groton (1984) provides for a similar risk management system as to what Latham (1994) does, but elaborates that controllable risks are to lie with the party in control and that uncontrollable risks should be allocated to the party best able to manage or protect against those unexpected risks.

The management of risk is a fundamental part of any project, with the golden rule being that risk has to be allocated to the party that is best able to manage the risk (Abrahamson, 1984) (Construction Industry Development Board (CIDB), 2004), (Fewings, 2013), (Latham, 1994), (Lam, et al., 2007) (Loosemore & McCarty, 2008) (Nasirzadeha, et al., 2014). Risk can be transferred from one party to the other, and is often done by Employers making bespoke amendments to standard form contracts (which are prepared to provide a balanced allocation of risk between the parties (Mason, 2016) (O'Connor, 2017)) in their favour (Peckiene, et al., 2013), however in doing this Employers have to realise that at any time a risk is transferred from one party to another, there is a consequential transfer of money in the opposite direction (Mason, 2016) (O'Connor, 2017) (Steyn, et al., 2008), resulting in an increase in cost under healthy economic conditions.

Careful risk allocation at the project planning phase and during risk management will result in greater tender competition, lower tender or negotiated prices and increased efficiency in job execution (Groton, 1984).

1.1.2 The Project Manager and the use of contracts to allocate risks

One of the roles of the Project Manager (or its construction lawyer (Mason, 2016) in the case of the construction contract) is to determine the strategy for the project; by way of determining the procurement route, risk management (with the burden of identifying risk, analysing and managing the same being that of the Project Manager and the client (Thompson & Perry, 2003 reprint)), cost control and quality management for a project (Fewings, 2013), however the Project Manager may be prone to improper risk allocation, as the Contractor is not involved in the process of determining the risk allocation (Peckienea, et al., 2013). It is therefore necessary to develop a delimitation of risks in construction contracts to determine in order to compare how different standard form construction contracts deal with these risks.

The contract indicates roles and responsibilities of the Employer and the Contractor (the parties to the construction contract), as well as the allocation of project risks, and gives procedures for avoidance and possible resolution of disputes arising (Mason, 2016).

1.2 Problem definition

Construction Employers (for general building construction work) in South Africa have different options (when it comes to the contracting strategies and forms of contract) that are available to them in order to appoint a Contractor to deliver a project. The study aims to investigate the risks that Employers adopt during traditional procurement with a design provided by the Employer and with bills of quantities. The study specifically considers risks related to the actions (and related consequences) of the Employer and its main agent (the Principal Agent – JBCC, Project Manager – NEC and the Engineer – FIDIC) in order for these Employers to manage or transfer those risks based on those Employers' risk profiles. Reference is specifically made to the JBCC PBA 6.2, NEC4 ECC Option B and FIDIC Red Book 2017 forms of contract.

1.3 Research purpose

The purpose of this research report is to determine, quantify and compare (from the JBCC PBA 6.2, NEC4 and FIDIC Red Book 2017 standard form construction contracts) what the risks to the Employer are, resulting from: its own mandatory obligations, the main agent's (the Principal Agent – JBCC, Project Manager – NEC and the Engineer – FIDIC) mandatory obligations; as well as risks related to the provision of health and safety, the environment and quality provisions.

1.4 Research aim

The aim of this research report is to provide a better understanding of what is expected of the Employer and the main agent (the Principal Agent – JBCC, Project Manager – NEC and the Engineer – FIDIC) so as to better inform both of these parties to manage projects and contracts better, more effectively and within the prescribed time limits in future; as my experience in the industry has shown that it is lacking and that contracts are generally resorted to once the Parties to a contract develop either a dispute or an adversarial relationship.

1.5 Research objective

The objective of the report is achieved by critically analysing the standard form contracts' mandatory obligations and understanding what is expected of the responsible person, as

well as what period the obligation is required to be met in. This, combined with a detailed and in-depth understanding of the results of non-action of mandatory obligations serves as a repository of information for improved contract and project management and ultimately superior project delivery in future.

1.5.1 The first hypothesis

Construction projects are exposed to an almost unlimited number of risks; however, those risks can be categorised for the Parties to the construction contract and the construction work in general.

1.5.2 The second hypothesis

The limited critical review of the JBCC PBA 6.2, NEC4 and FIDIC Red Book 2017 forms of contract will show that potential Employer risks could be categorised in terms of the limited categories identified in the limitations (1.7 Limitations).

1.5.3 The third hypothesis

Potential Employer risks can be related in terms of specific contract clauses and that the "effect" of the potential Employer risks can be expressed in terms of contract clauses with clause reference to financial and time impact.

1.6 Research methodology introduction

The research report was done based on a critical literature review to determine what the current body of knowledge is on the subject matter. In addition to this, a critical review was done to evaluate and compare the JBCC PBA 6.2, NEC4 and FIDIC Red Book 2017 standard forms of contract with specific reference to determine, quantify and understand the risks related to non-action. Once this review was completed, the results were quantified, interpreted and conclusions drawn from it. The results and conclusions were issued to a construction contracts practitioner for review and commentary, the comments of which were incorporated into the research report in order to ensure a robust set of results were presented.

1.7 Limitations

For the purpose of this research report the limitations are listed as follows:

a) To focus on the following distinct categories of risks borne by Employers under standard form construction contract clauses:
    i. Risk due to the Employer's own obligations (owner's risk);

ii. Risk due owner's Project Manager / Principal Agent / Engineer obligations (Engineer's risk, consultant's risk);
iii. Construction related risks.

The above risks are relevant to this study, as there is a gap in the current body of knowledge on this specifically.

b) To compare the following standard form construction contracts (with the emphasis on 1.7 a) above:
   i. The Joint Buildings Contracts Committee (JBCC) ® - NPC, Principal Building Agreement, Edition 6.2 – May 2018;
   ii. Institution of Civil Engineers, NEC®4 – Engineering and Construction Contract, Option B: Priced Contract with Bills of Quantities, 4th Edition – June 2017; with the following secondary option clauses: X1, X2, X4, X5, X7, X11, X13, X14, X16 and W1 (as these secondary option clauses make for the most appropriate comparison to the other contracts in question);
   iii. Fédération Internationale des Ingénieurs-Conseils (FIDIC) (International Federation of Consulting Engineers) – Conditions of Contract for Construction – For Building and Engineering Works Designed by the Employer, 2nd Edition – 2017.

   The above contracts are relevant to this study, as these are commonly used standard form contracts in use in South Africa.

c) To focus on the "General Building Works" construction work classification (as opposed to Civil Engineering Works, Electrical Engineering Works (Infrastructure) and Electrical Engineering works (buildings)), as defined by the CIDB (Construction Industry Development Board (CIDB), 2015).

   The above reference "General Building Works" is a relevant area of classification, as it constitutes a significant portion of the private property development in South Africa.

1.8 Introduction conclusion

Over time and with the advancement of various technologies, projects have become increasingly complex with an associated increase in risk accompanying these temporary and unique endeavours. These risks cannot be ignored, but can however be identified; after which it can be managed, minimised, shared, transferred or accepted; however, risk can never be ignored.

Different construction project contracting strategies carry different risk balances between the Employer and the Contractor, as such the Employer is well advised to be guided by its project (or contract) manager to develop a contracting strategy that best suits the Employer's level of expertise as well as its risk appetite and profile. Once the contracting strategy has been developed by the Employer and its agent, the agent needs to advise the Employer on the standard form construction contract best suited for the contracting strategy (based on the risk profile, risk balance and which party is best able to manage the risk), as these standard from construction contracts allocate most common risks fairly to the party best able to manage the risk.

The research report will aim to analyse and compare three different standard form construction contracts with each other, with specific reference to the adoption of risk by the Employer owing to its actions, its project manager's actions as well as general construction risks. In order to arrive at a meaningful comparison, the limitation on the contracting strategy is that of the design provided by the Employer, with the associated traditional procurement with bills of quantities. The main problem is to inform Employers as to what risks they adopt in terms the JBCC PBA 6.2, NEC4 ECC Option B and FIDIC Red Book 2017 forms of contract for these Employers to manage or transfer those risks based on those Employers' risk profiles.

Taking the above into consideration, it is hypothesised for the standard form contracts in question that:

i. Risks can be categorized for the different parties to the construction contract and the construction work in general;
ii. Potential Employer risks could be categorised in terms of the limited categories identified in the limitations;
iii. Employer risks can be related in terms of specific contract clauses and that the "effect" of the potential Employer risks can be expressed in terms of contract clauses with clause reference to financial and time impact;

iv. One of the standard form construction contracts exposes the Employer to risk through its limited works information provision at tender/contract agreement stage;
v. One of the standard form construction contracts exposes the Employer to risk through its subcontracting regime;
vi. One of the standard form construction contracts exposes the Employer to risk through its substandard programme regime

A thorough literature review follows to determine what the current body of knowledge is on the subject matter, in addition to this a limited critical review follows on the standard forms of construction contracts in question.

2 RESEARCH METHODOLOGY

2.1 Methodology introduction

The research report was done based on a critical literature review to determine what the current body of knowledge is on the subject matter. In addition to this, a critical review was done to evaluate and compare the JBCC PBA 6.2, NEC4 and FIDIC Red Book 2017 standard forms of contract with specific reference to determine, quantify and understand the risks related to non-action. Once this review was completed, the results were quantified, interpreted and conclusions drawn from it. The results and conclusions were issued to a construction contracts practitioner for review and commentary, the comments of which were incorporated into the research report in order to ensure a robust set of results were presented.

2.2 Determination and quantification of obligations

In order to do an analysis of the obligations related to different members to the contracts, one has to understand what types of obligations are typically encountered in construction contracts and from there to develop a better understanding of those obligations.

Mason (2016) adds to Rowlinson (2011) on the rights and obligations contained in construction contracts, with a tabular representation of the ‘bare essentials’ for the parameters of construction contracts shown in Table 1 in chapter 3.1.5. In addition to the understanding of the general obligations of the Parties, one needs to separate mandatory and discretionary obligations from each other in order to get a better understanding of the risks related to non-action of obligations bestowed on the members to the contract. As described in the Core Terms, a mandatory obligations relates something that must be done in order for a right to be created for one party and (or) an obligation for another party (Rowlinson, 2011); whereas a discretionary obligation is something that could be done by a party if they feel it is appropriate to be done, but do not risk losing anything if it is not done (Rowlinson, 2011).

With the difference between mandatory and discretionary obligations understood, in that mandatory obligations creates risk if not performed and discretionary obligations on the other hand don’t; the process that will follow is to do a literature review to determine the body of knowledge on the mandatory obligations related to the standard form contracts in question. Where there is no specific information available on this, a critical review of the contract in question will be done to determine what the mandatory obligations are (taking the Limitations in 1.7 into consideration).

Once the mandatory obligations have been determined the contracts will be compared to understand the quantum of mandatory obligations related to each standard form contract, from which a critical analysis will be performed.

2.3 Determination of results related to obligations

Once the quantification of the results related to the mandatory obligations (taking the Limitations in 1.7 into consideration) is completed, a critical analysis of these mandatory obligations will be done for each of the standard form contracts in question. From critical analysis it is expected that the results related to the non-performance of mandatory obligations will be able to be separated into a number of distinct categories, which can be used for a meaningful comparison of the standard form contracts.

2.4 Comparison of results related to obligations

The comparisons of the standard form construction contracts in question will highlight the impact of non-performance, with specific reference to the understanding which of the mandatory obligations relate to more serious consequences than others.

The comparisons will be separated into the following categories:

1. Quantum of Employer related mandatory obligations;
2. Quantum of main agent related mandatory obligations;
3. Quantum comparison of Employer related mandatory obligation non-performance risks;
4. Quantum comparison of main agent related mandatory obligation non-performance risks;
5. Overview of main mandatory obligations based on the outcomes of the above.

3 LITERATURE REVIEW

3.1 The basic principles of contract law in the South African legal system

3.1.1 Contract offer, acceptance and agreement

A contract can be defined as an agreement between two or more parties, with the core intention of being both legally binding and enforceable (O'Connor, 2017), embracing rights, responsibilities, prerogatives and privileges; with the provision that the parties must agree the consequences of the agreement, in terms of the application of the agreed contractual relations (Cumberledge, et al., 2008).

The above covers the general sense of what a contract entails, but Segal (2018) expresses quite clearly what the parties agree to when entering a construction contract, as well as summarising the rights and obligations of the parties: *"A building contract is an agreement between two parties, one of whom, the building Contractor, agrees to erect a building, and the other the Employer, agrees to pay for it. Personal rights and obligations are created by the agreement, the right of one party being the obligation of the other. The Contractor has the obligation to erect the building and the right be paid for it, while conversely the Employer has the right to have the building erected and pay for it."*

The basis then of a contract is the agreement between the parties, with the South African common law having developed a series of tests to determine whether an agreement has been reached. The Supreme Court of Appeal (then Appellate Division) reaffirmed the principles of offer and acceptance in the landmark case of *Conradie v Rossouw (1919 (A)279)*: *"According to our law if two or more persons, of sound mind and capable of contracting, entered into a lawful agreement, a valid contract arises between them enforceable by action."*

In order to deal with any standard from construction contracts, an understanding is sought of what constitutes a contract. Mason (2016) agrees with the principles laid out in the *Conradie v Rossouw* case that a simple contract has three essential elements:

a) Agreement – the offer and acceptance;
b) Consideration – the ability to perform by either party;
c) The intention to create legal relations.

3.1.2 Basic provisions for construction contracts

Construction contracts and contracts in general "*prove the existence of and protect the parties' agreement as to how and what service or product is delivered, the allocation of risk as well as mitigate any uncertainty*", these are required to include for the following as a minimum:

i. "*the identity of the parties, their roles and responsibilities as well as their agents;*
ii. *the procurement method i.e. traditional or design and build;*
iii. *the price basis i.e. lump sum, measurable etc.;*
iv. *the project deliverables: the scope of work, the programme, the time for completion of the works, salient dates etc.;*
v. *how the contract shall be administered: the payment terms, mechanisms for allowing the scope of works to be varied, terms that explain how contract work or variations are to be valued;*
vi. *all the terms and conditions the parties have agreed including provisions for variations and extensions of time;*
vii. *information and instructions of how the works shall be completed; specification, tolerances, drawings etc.;*
viii. *any additional provisions such as third-party restrictions, health and safety, methodology for the works, insurances etc.;*
ix. *wherever possible an agreed schedule of rates and prices to be used in the event of variation*" (O'Connor, 2017).

3.1.3 General principles around terms and conditions in contracts

Conditions:

The definition for a condition (relating to contract law) is as follows: *A provision making the effect of a legal instrument contingent upon an uncertain event* (Mirriam-Webster, 2019).

Conditions are those items that qualifies a contractual obligation such as to make the implementation of the same contractual obligation wholly dependent on the occurrence (or non-occurrence) of an uncertain future event. With conditions being classified into various categories (Maritz, 2010):

i. Suspensive conditions - suspends the operation of an obligation, in whole or in part, subject to the occurrence on non-occurrence of a particular specified future event;

ii. Resolutive conditions – does not delay the operation of a contractual obligation in any way. These types of obligations are effective from the outset of the agreement and operates in full; however, the obligation may come to an end if certainty is reached in that the condition has been fulfilled or in that it has failed;
iii. Condition precedent – the parties agree this type of condition must be fulfilled before any contractual obligations come into existence between them;
iv. Options – a right acquired under a contract and agreed to between the parties in terms whereof one party acquires a right to something that may be exercised and realised in specified circumstances.

Terms

The definition for a term is as follows: *Conditions under which an action may be undertaken, or agreement reached; stipulated or agreed requirement* (Mirriam-Webster, 2019)

The terms of a construction contract are therefore the undertakings by the Employer and the Contractor, which make up the contract. Terms are classified into various categories (Hughes, et al., 2015):

i. Express terms: those terms which are contained in the body of the contract;
ii. Implied terms: those terms which are implied by law;
iii. In addition to those obligations created by a contract, a party may incur legal liability under the law of delict. The most important example of this type of liability is that based on negligence.

3.1.4 South African Common Law

The Common Law is a set of legal rules that results not from the enactment of parliament or similar law-makers, but rather is borne from customs and practices that have over a long period of time enabled people to live and work together in communities (Segal, 2018).

The South African common law is based on Roman Dutch law, with Johannes Voet (1673-1745) being the leading authority on common law (Ramsden & Ramsden, 2009). The reference to the same being relevant as certain conditions in contract law are either based on common law or are distinct deviations from the same; a prime example being that common law provides for payment once the service has been completed or the product delivered. This common law principle is in line with the *exceptio non adimpleti contractus* – which means that "*Regardless of what I may eventually be obliged to pay*

you, I am not obliged to pay you one cent until you have finished the work", however in projects (due to cash flow constraints on the Contractor's side) a system exists where the Contractor is paid progressively (Segal, 2018) (Steyn, et al., 2008).

3.1.5 Who, what, when and how and obligations

In his book "A practical guide to the NEC", Rowlinson (2011) covers a two-step formula to understand contracts. The first being the "*Who, What, When and How*" and the second being mandatory and discretionary obligations of the parties (and other personalities to the contracts).

As has been established in 3.1.1 above, a contract covers the rights and obligations of the parties to it, regardless what the contract is for (Rowlinson, 2011). Construction contracts, and in this case specifically standard form construction contracts, bestow an extensive list of rights and obligations to the parties, as well as how those rights and obligations are to be administered, and importantly what the involvement of the agents of the Employer are in order to carry out these duties.

The "Who, What, When and How" portion of the formula can be summarised as follows:

i. WHO: this relates to the administration of the contract's rights and obligations, with each standard form contract stating specifically WHO the different personalities are (typically in the Contract Data). As an example, these personalities for the NEC4 ECC are: The Employer, Contractor, Project Manager, Supervisor and the Adjudicator;
ii. WHAT: the contract, through its express processes and procedures, sets out WHAT shall be done if certain express circumstances arise (involving WHO will be doing these things as required in the contract);
iii. WHEN: the contract, through its express processes and procedures, states WHEN these things required shall be done. Failure to comply with WHEN these actions required in terms of the contract are required, can result in the forfeiture of certain rights;
iv. HOW: the contract sets out HOW these processes and procedures shall be carried out.

Rowlinson (2011) goes on to summarise that the first portion of the formula is to consider "*WHO does WHAT, WHEN they do it and HOW it is to be done*".

The second portion of the formula relates to whether an obligation is a mandatory obligation or a discretionary obligation.

i. Typically, the words ‘shall’, ‘must’ or ‘will’ relate to something that absolutely must be done (that is mandatory), failing which the right to something will be forfeited;
ii. This contrasts with the words ‘may’ or ‘can’ relating to the action of doing something, where inaction will not result in something necessarily being forfeited (that is discretionary).

Mason (2016) adds to Rowlinson (2011) on the rights and obligations contained in construction contracts, with a tabular representation of the ‘bare essentials’ for the parameters of construction contracts, as shown in Table 1, these are:

Table 1 – Construction contract comparison between employer and contractor of basic obligations (Mason, 2016)

EMPLOYER	CONTRACTOR
Pay	Build
Instruct	Obey
Set deadlines	Meet deadlines
Give possession	Take possession
Give design	Follow or complete design

3.2 The selection of Employer risks

According to the insurance company MAPFRE (2012) “*it would be impossible to enumerate all the risks which may arise during the development of construction projects”*, as such for the purpose of this report it is deemed necessary to delimit the risks which the contracts in question are measured against. Zachmann (2014) indicates that the modern understanding of risk presupposes subjects or institutions, accountable for their actions, that make decisions under conditions of apparent uncertainty.

The following different risk classifications from different sources and authors have been identified::

i. Based on insurance coverage, different risks are classified as:
    a. Conventional (ordinary) risks,
    b. catastrophic (extra-ordinary) risks, and
    c. risks inherent in the works (MAPFRE, 2012);
ii. Political, economic, cultural/legal, technical/ construction and other risks (Han & Diekmann, 2001);

iii. Natural, political & social, economic & legal and behavioural (Shuibio, 2006);
iv. A project related chronological classification dividing risk into the following phases: pre-construction; construction; and post-construction (Bunni, 2003);
v. Man-made risks and natural risks (Edwards & Bowen, 2005).

Based on the above, Table 2 provides a summary of the construction risk classifications:

Table 2 – Construction risk classification and basic summary of risks

Construction risk classification					
Insurance coverage	**Political**	**Economic**	**Cultural / legal**	**Natural**	**Project related**
Conventional	Strike	Price fluctuation of material	Amendment of legislation	Natural catastrophes	Pre-construction
Catastrophic	Lock-out	Price adjustment	Change in regulations	Acts of God	Construction
Risks inherent with the works	War, civil commotion and disorder	Labour and Equipment			Post-construction

From the above research it is evident that there are many classifications of risk based on apparent uncertainty, however for the purpose of doing a comparison between different forms of contract, one could limit the comparison of the risks based on who ultimately bears responsibility. Ayalew (2017) concludes to classify construction risk into five categories, namely:

i. Employer risks (which types of risks are solely attributable to the actions, forbearances, or negligence by the employer and it's agents (Shuibio, 2006)),
ii. Contractor risks (which types of risks are attributable to the actions, forbearances or negligence of contractors (Bunni, 2005)),
iii. Subcontractor risks (which types of risks are attributable to the subcontractor taking over certain portions of the work from the contractor (James, 1994)),
iv. Third-party risks (which types of risks are created by those other than the parties to the contract (Dixon, 2016)), and
v. Common risks (which types of risks are shared between the parties (Dixon, 2016)).

Ayalew (2017) concludes to categorise Employer risk (from i) above) into the following areas:

i. owner's risk,
ii. Engineer's risk, and
iii. consultants' risks.

This research report will keep with the classification of the above referenced owner's risk and Engineer's risk (which includes for consultant's risk as stated above) and add to these the general construction related risks:

i. Risk by Employer's own actions (owner's risk);
ii. Risk by owner's Project Manager (NEC4 ECC) / Principal Agent (JBCC PBA 6.2) / the Engineer's actions (FIDIC Red Book 2017) (Engineer's risk, consultant's risk);
iii. Construction related risks.

In Table 3, Hughes, et al (2015) shows the above identified risks between the Employer (owner's risk), advisor / consultant (Engineer's risk, consultant's risk) and constructor (Construction related risks):

Table 3 - Structure of responsibilites in construction projects (Hughes, et al., 2015)

Client / Employer	Representative	Client Project Manager, client's representative, Employer's representative/Project Manager.
	Advisor	Advisory group, feasibility consultant.
	Stakeholder	End-user, general public, tenant, workforce.
	Supplier	Client's direct contractor, preferred supplier.
Advisor / Consultant	Design leadership	Architect (management function), design leader, lead consultant, lead designer.
	Management	Consultant team manager, design manager.
	Design	Architect (design function), architectural designer. Designer, specialist advisor, Engineer, consultant (etc.).
	Administration	Architect, contract administrator, supervising officer. Principal designer, project administration.
	Site inspector	Clerk of works, resident engineer.
	Financial	Cost advisor, cost consultant, quantity surveyor.
Constructor	Overall responsibility	Builder, contractor, lead contractor, general contractor, main contractor, principal contractor, design-build contractor, design contractor, management contractor.
	Contractor's staff	Construction manager, construction planner, contract manager, person-in-charge, site agent.
	Partial responsibility	Engineering contractor, package contractor, specialist, specialist contractor, specialist subcontractor, specialist supplier, specialist trade contractor. Domestic subcontractor, labour-only subcontractor, named subcontractor, nominated subcontractor, nominated supplier, specialist subcontractor, supply only subcontractor, subcontractor, trade contractor, works contractor.

3.3 Determination of procurement route

Richards & Bowen (2007) argue that the contractual arrangement can act as a barrier to achieving successful construction procurement, which in may turn lead non-achievement the Employer's strategic objectives, as such it is fair to say that the chosen procurement strategy/route should be considered carefully, with the advantages and disadvantages of the different procurement routes being weighed up against each other in order for the Employer to make an informed decision on the same.

Employers often do not have the expertise to be the Contractor within themselves or could choose not to develop projects in this way in order to manage their risk better. As such, external sources are utilized to deliver and close-out projects; consequently, the entire procurement process is directed towards obtaining the end result from these external sources. For the Employer to best manage its risk, there are factors which need to be considered in order to arrive at the desired contracting strategy for the envisioned project; these can be summarised as follows:

i. Characteristics of the project:
    a. Complexity of the project: that is the number of work packages planned and the interfaces between the these and other processes or projects;
    b. Size in monetary value;
    c. Urgency for completion and other time constraints;
    d. Quality of workmanship required – normal or exceptional?
    e. Any budgetary constraints.
ii. Capabilities of the Employer (the Employer will have to do some honest self-assessment in this regard);
    a. Expertise and related experience available within the Employer's organisation to execute a project of the planned magnitude (in monetary terms), complexity and quality required;
    b. Assistance required by duly skilled professionals from the different roles required for projects, that is the Project Manager, Architect, Engineer, Quantity Surveyor, Lawyer, and so on;
    c. Management capacity / capability and legal expertise available in the Employer's organisation;
    d. Capability to identify, define and take any, some or all of the risks or successfully mitigate (transfer) the identified risks.
iii. Capabilities of the Project Manager (Steyn, et al., 2008).

Once the above referenced analysis has been completed can the Employer elect which type of contract to use to deliver the project in question, taking cognisance (by way of advice from the Project Manager or legal advisor) of each of the advantages, disadvantages, degree of flexibility, incentives and allocation of risks of each of the options at hand.

The CIDB, illustrate in Figure 1 a process similar to the findings by Steyn, et al. (2008) in their Best Practice Guideline C2 (2004:11-12), in order to choose which contract is best suited to the work in question:

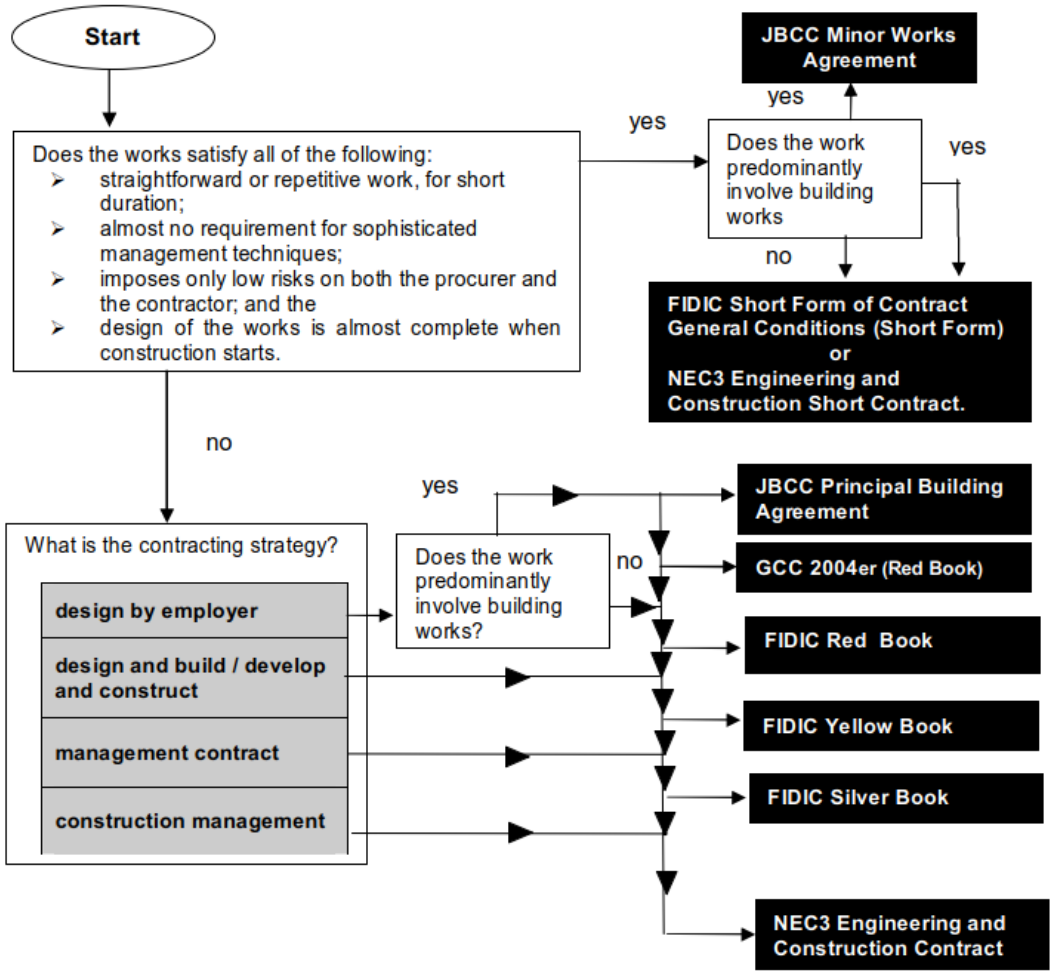


Figure 1 - Selection of an appropriate form of contract for engineering and construction works (Construction Industry Development Board (CIDB), 2005)

Note that the summary depicted in Figure 1 is based on the earlier versions of the all of the contracts in question, however the core principals of the latest versions which the research report focusses on is still in line with the previous versions of each of the individual standard form contracts.

3.4 Design by Employer (with re-measurable bills of quantities) contracting strategy risk profile

Employers have many different contracting strategies which could be used to achieve the asset at the end of the project, a summary of which can be listed as follows:

i. Construction management;
ii. Design and build;
iii. Develop and construct;
iv. Design by Employer (general contracting);
v. Management contract (Construction Industry Development Board (CIDB), 2005); and
vi. Collaborative contracting (Hughes, et al., 2015).

These all fall under three basic types of contract (with a short summary of advantages and disadvantages listed for each) (Steyn, et al., 2008):

i. Lump-sum (fixed price):
   An agreement where the parties agree to: 1) a single fixed sum for specified work to 2) be carried out by a certain date in the future.
   a. Advantages:
      i. Cost is known from the start;
      ii. Low risk for the Employer;
      iii. High incentive for the Contractor to keep internal cost under control in order to keep within the agreed single fixed sum;
      iv. Administration (by the Employer) is limited to quality control.
   b. Disadvantages:
      i. Bids returned from different Contractors (tenderers) are not always comparable, as these are based on the Contractors' individual understand of the requirements;
      ii. The Employer has little chance of changing the scope of work;
      iii. Quality may suffer as a direct consequence of the Contractor having to keep internal cost and profit (if achieved) within the agreed fixed sum;
      iv. Interim payments are not easily quantifiable;
      v. Employer has high effort upfront to provide a suitably detailed design and scope of work.

ii. Re-measurable;

An agreement based on bills of quantities being drawn up and suitably priced, with all work being quantified per item and drawn up to a standard/method of measurement.

a. Advantages:

i. An improved level of definition for the scope of work when compared to lump-sum contracts, as such the tenders submitted are directly comparable;

ii. Accurate interim and final payment is made for work done, based on a standard/method of measurement;

iii. The Employer has the flexibility to make changes at any point in time, as there are quantified items with rates which to measure the change from;

iv. Scheduling is simpler to do, as the items of work and related quantities are known upfront;

v. Even risk distribution between the parties.

b. Disadvantages:

i. The final contract value is only known at the end of the project when all the work has been measured and agreed with the Contractor;

ii. The Employer carries the risk of increase of quantities;

iii. For the measurement of quantities to be accurate the scope of work has to be properly defined at the outset of the project.

iii. Cost reimbursable (cost-plus):

An agreement which is typically used when 1) the scope of work is vague when the contract is to be agreed and 2) with the requirements being defined as the work progresses. The Contractor is compensated for all costs plus a fee (either fixed based on the agreed overheads and profit or a percentage of the final cost).

a. Advantages:

i. Contractor's input on the various designs can be obtained;

ii. The Employer has high flexibility on design alterations and additions;

iii. The Employer pays for the actual cost incurred.

b. Disadvantages:
    i. Little incentive for the Contractor to be productive or to reduce input costs;
    ii. Extensive Employer control measures are required;
    iii. The Employer carries maximum cost and time risk;
    iv. The Contractor's risk is limited to quality of the end product.

The above referenced design by Employer (general contracting) contracting strategy has contractual relationships between all the different consultants individually, as well as the general Contractor and the Employer directly, shown in Figure 2 follows:

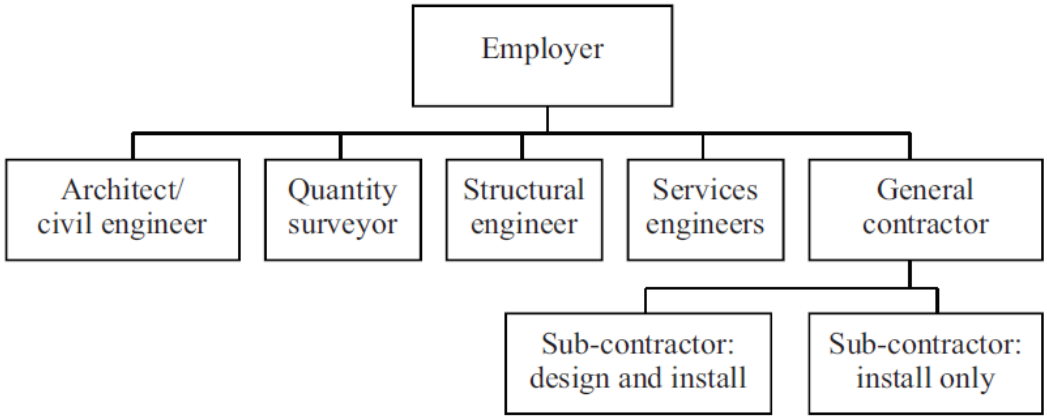
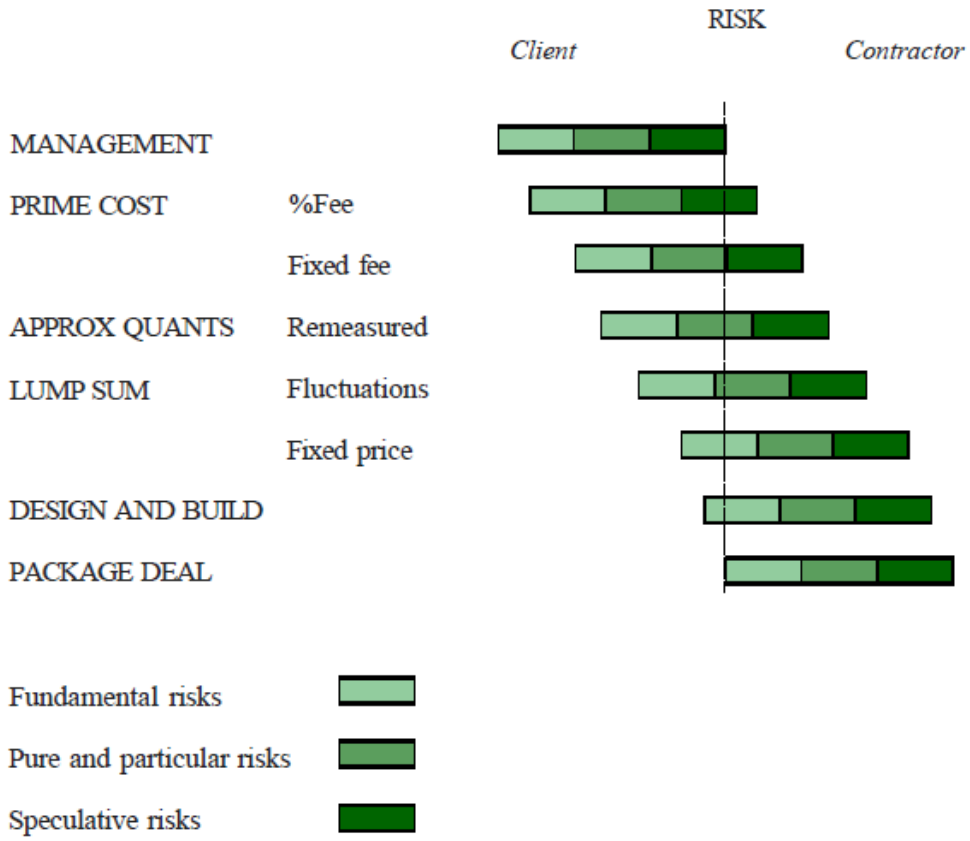


Figure 2 – Contractual relationships in general contracting (Hughes, et al., 2015)

However, in order to understand where the research report will focus, one must consider how the chosen contracting strategy (in this instance) stacks up against other contracting strategies when it comes to the allocation of risk between the Employer and the Contractor. Latham (1994), illustrates this risk allocation as being neutral between the Employer and the Contractor (for design by Employer with re-measurable BoQ's):



1. Fundamental risks: War damage, nuclear pollution, supersonic bangs
2. Pure risks: Fire damage, storm
3. Particular risks: Collapse, subsidence, vibration, removal of support
4. Speculative risks: Ground conditions, inflation, weather, shortages and taxes

Figure 3 - Risk profile of different contracting strategies (Latham, 1994)

Based on the above Figure 3 it is evident that:

i. the Employer carries the 'fundamental risks',
ii. the 'pure and particular risks' are shared between the Employer and the Contractor, and
iii. the 'speculative risks' are carried by the Contractor for the chosen procurement strategy.

The CIDB provides a different type of graphic of the same, but also include flexibility in the graphic in their Best Practice Guideline #C2, illustrated as follows:

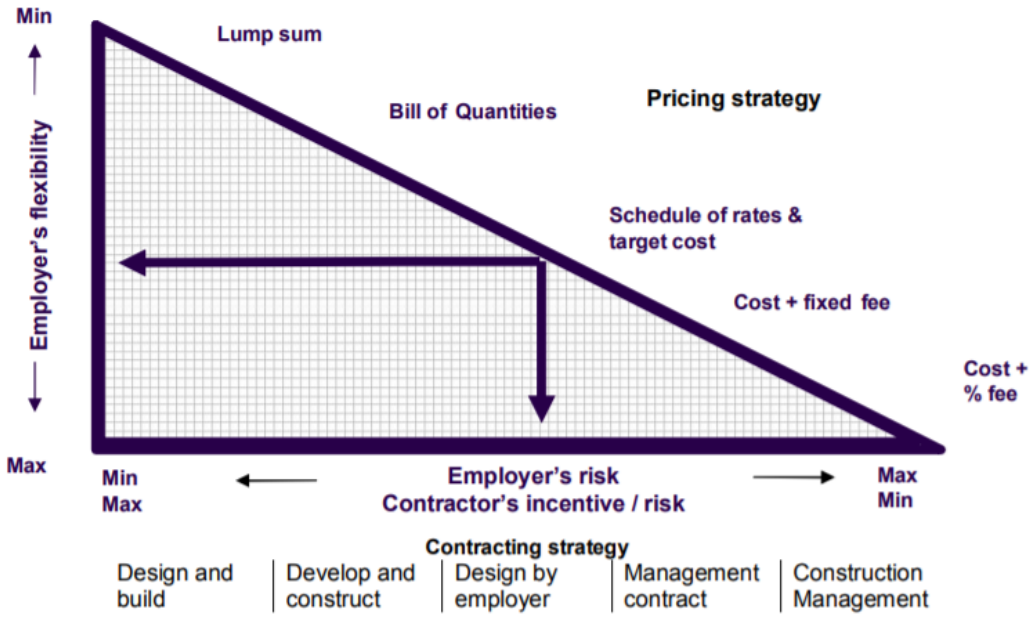


Figure 4 - Typical allocation of total risk between parties (Construction Industry Development Board (CIDB), 2005)

Based on the above Figure 4, it is evident that the procurement strategy, which the research report focusses on, provides the Employer with relatively low level of flexibility and risk, and somewhat higher risk adopted by the Contractor.

3.5 Framework for the selection of the standard form contracts in question

The selection of the standard form construction contracts made in 1.7 Limitations is from a staggering list of more than 200 construction contracts available for use in the construction industry as a whole worldwide (Cousins, 2016).

Table 4 illustrates which of the different types of contract were used for different project types in South Africa as at 2013:

Table 4 - Type of contract document used for different project types in SA in 2013 (Marx, 2014)

Project Type	% Contract Document Type usage for each Project Type					Total
Residential Building	20	-	68	8	4	100
Non-residential Building	13	1	83	-	3	100
Civil Works	76	4	6	10	4	100
Mechanical Works	27	13	10	23	27	100
Electrical Works	27	20	29	18	6	100
Special Works	31	6	44	13	6	100
Contract Document Type	GCC	NEC	JBCC	FIDIC	OTHER	
% Projects with Contract Document significantly amended	31	36	24	33	18	

The above Table 4 shows that there is a relatively even spread of use between the NEC (36%), JBCC (24%) and FIDIC (33%) forms of contract, as at 2013 in South Africa, which highlights that the list chosen for the research report is applicable in the South African context.

However, it is not noted by Marx (2014) which option was used under the NEC form of contract, nor is reference made to which of the different FIDIC forms of contract is used for the data set shown. This is a shame, as the reference to NEC does not provide clarity on what procurement route was followed (i.e. Main Option A - Priced contract with activity schedule; Main Option B - Priced contract with bill of quantities; Main Option C - Target contract with activity schedule; Main Option D - Target contract with bill of quantities; Main Option E – Cost reimbursable contract, or; Main Option F – Management contract), nor which party was responsible for the design.

In addition to Marx's (2014) report not highlighting which options were used under the NEC, the reference to FIDIC is also quite open, as the FIDIC suite of contracts consist of several different contracts, all of which are suited to different types of procurement routes with different risk allocations, that is: The Red Book – For building and Engineering work designed by the Employer; The Silver Book - for contracts let under design and build contracts and this includes the EPC approach; The Yellow Book is also used for design and build, usually for projects with a large element of electrical and mechanical works; The Green Book is the short form of contract suitable for fairly simple or repetitive work of short duration; The Pink Book, launched in 2005, is an alternative to the Red Book approach that specifically suits projects funded by development banks; The Gold Book, published in 2008, is the contract for use with Build, Own, Operate, Transfer (BOOT) scenarios (Mason, 2016).

What is of interest in Marx's (2014) report is that the JBCC accounted for 68% of contract types used in the residential building industry and 83% in the non-residential building industry – this really highlights just how much of a common practice contract the JBCC (in its different editions) has become in the general building market in South Africa, especially on commercial projects.

Table 5 - Distribution per project type and and Employer category 2013 (Marx, 2014)

Project Type	Total No. of projects	26	14	4	20	26	7	3	0	% of Total Survey Results
Residential Building	25	14	2	-	9	-	-	-	-	7
Non-residential Building	97	27	16	4	34	8	4	4	-	26
Civil Works	158	26	11	11	25	60	21	4	-	42
Mechanical Works	30	12	6	-	4	6	1	1	-	8
Electrical Works	50	12	13	1	3	19	-	2	-	13
Special Works	16	5	5	1	-	5	-	-	-	4
Not Specified	-	-	-	-	-	-	-	-	-	0
Total No. of Projects	**376**	96	53	17	75	98	26	11	-	
Employer Category		Private Sector	Public Corporation e.g. ESKOM, ACSA	National Department	Provincial Department	Metropolitan Council	Regional / District Council	Public Private Partnership	Not Specified	

The above Table 5 shows that the data represented in Table 4 is applicable to the research report, as a significant portion (26%) of the projects in the sample ($\frac{96}{376} = 26\%$) by Marx (2014) was solicited in the private sector. Additionally Table 5 shows that general building projects (residential building and non-residential building in the sample) represented 32% ($\frac{(25+97)}{376} = 32\%$) of the sample in the report, as such it can be construed that the data presented is applicable for the research report and its limitations.

In terms of the applicability of the contracting strategy suggested for the research report, Marx (2014) shows that the "design by Employer" method accounted for 68% of the contracts in the private sector, as reflected in Table 6:

Table 6 - Contracting strategies adopted per Employer category 2013 (Marx, 2014)

Contracting Strategy	% Projects with Contracting Strategy per Employer Category					
Design & Build	14	15	-	10	14	11
Develop & Construct	4	-	12	1	7	-
Design by Employer	68	79	63	66	76	77
Management Contract	4	2	12	12	-	4
Construction Management	10	4	13	11	3	8
Employer Category	Private Sector	Public Corporation	National Department	Provincial Department	Metropolitan Council	Regional/ District Council

Care has to be taken by the Employer and its Project Manager (or procurement agent) when deciding on the procurement strategy and consequently the standard form of

contract to clearly understand the complexity of the planned works and the contractual arrangements appropriate to the works (Cousins, 2016).

The above selection of standard form construction contracts is made based on the three different contracts in question (with the NEC4 Option B: Priced Contract with Bill of Quantities option clauses being selected) all being suited for building construction on re-measurable bills of quantities and designs provided by the Employer (in the case of the NEC4 ECC this has to be so elected in the Scope) (Segal, 2018) (Forward, 2018) (Hughes, et al., 2015). Additionally, the above three different contracts are all later versions of the contracts that the CIDB Standard for Uniformity in Construction Procurement require Employers to contract for construction works, with the exception being that said standard also includes for the use of the General Conditions of Contract for Construction Works, 2010 – 2nd Edition by the South African Institution for Civil Engineering (GCC).

The research report specifically excludes the above referenced GCC contract for two reasons, firstly as that contract was developed for and is in use by the public sector (HKA, 2017), where the focus of the research report is targeted at the private sector and secondly that the contract is generally not suited for general building work.

3.6 Proposed framework

Based on the above information, the framework proposed for the selection of which standard form contract to use is as follows:

1. Determine the contract strategy:
    a. who will develop the project?;
    b. who will prepare and take responsibility for the design (Employer or Contractor)?,
    c. who will do the management of the contract (Employer or Contractor);
2. Determine the pricing strategy:
    a. whether the pricing will be prepared based on activities?;
    b. whether a BoQ will be prepared for re-measurement?;
    c. whether the costs will be reimbursable based on proven costs?;
    d. whether the Employer and Contractor will share a target cost to achieve?.

The above framework is quite eloquently shown as follows by the CIDB in Best Practice Guideline #C2, which visually illustrates that the above selections of standard forms of

contract is indeed applicable and suitable to the design by Employer with bills of quantities procurement route (that is the standard procurement route):

Consideration	NEC3 Engineering and Construction Contract (ECC2)	NEC 3Engineering and Construction Short Contract. (ECSC)	FIDIC Conditions of Contract for Construction and Building and Engineering Works Designed by the Employer (Red Book)	FIDIC Conditions of Contract for Plant and Design (Yellow Book)	FIDIC Conditions of contract for EPC Turnkey Projects (Silver Book)	FIDIC Short Form of Contract General Conditions (Short Form)	JBCC Principal Building Agreement	JBCC Minor Works Agreement	GCC 2004
Contract strategy									
Construction Management	√	×	×	×	×	×	×	×	×
Design by Employer	√	√	√	×	×	√	√	√	√
Management Contract	√	×	×	×	√	×	×	×	×
Design and Build	√	√	×	√	√	√	×	×	×
Develop and Construct	√	√	×	√	√	√	×	×	×
Pricing strategy									
Activity schedule*	√	√	×	√	√	No standard provisions	√	√	√
Bill of quantities	√	√	√	Not fully developed	×		√	√	√
Cost reimbursable	√	×	×	×	×		×	×	×
Target cost	√	×	×	×	×		×	×	×
Back-to-back subcontracts	Two standard subcontracts available (Engineering and Construction Subcontract (ECS) and the Engineering and Construction Short Subcontract ECSS)). ECC2 and ECSC can also be used as subcontract documents.		None available				Nominated / selected subcontract agreement available.		None available

* An activity schedule with a single activity is in effect a lump sum contract.

Figure 5 - Provisions relating to particular pricing and contracting strategies (Construction Industry Development Board (CIDB), 2005)

Note that the summary depicted in Figure 5 is based on the earlier versions of all of the contracts in question, however the core principals of the latest versions which the research report will focus on is still in line with the previous versions of each of the individual standard form contracts.

The conclusion on the framework is that the JBCC PBA 6.2, NEC4 ECC and FIDIC Red Book 2017 all meet the requirements for the design provided by the Employer with a BoQ, specifically for general building work (as defined by the CIDB) in South Africa.

3.7 Advantages of standard forms of contract

Standard forms of contract have distinct advantages, when compared to bespoke contracts, which can be listed as follows:

i. The risk profile is defined by a known set of terms and conditions (Cousins, 2016);
ii. The procurement period is reduced, as the terms and conditions of standard forms of contract are known (Cousins, 2016), (Gillette, 2009) (South African Institute of Architects (SAIA), 1999);
iii. A reduction of cost and time is possible (Cousins, 2016).

Employers however do not often leave standard forms of contract as is, and quite regularly make changes to the terms and conditions contained; from this two different

categories of bespoke amendments are generally made to standard form contracts; those are additions and deletions in order to change the risk profile of the contract to the advantage of the Employer (Mason, 2016).

Mason (2016) illustrates in Figure 6 the bespoke amendments to standard form contracts as follows, with specific reference to the risk allocation of the revised contract:

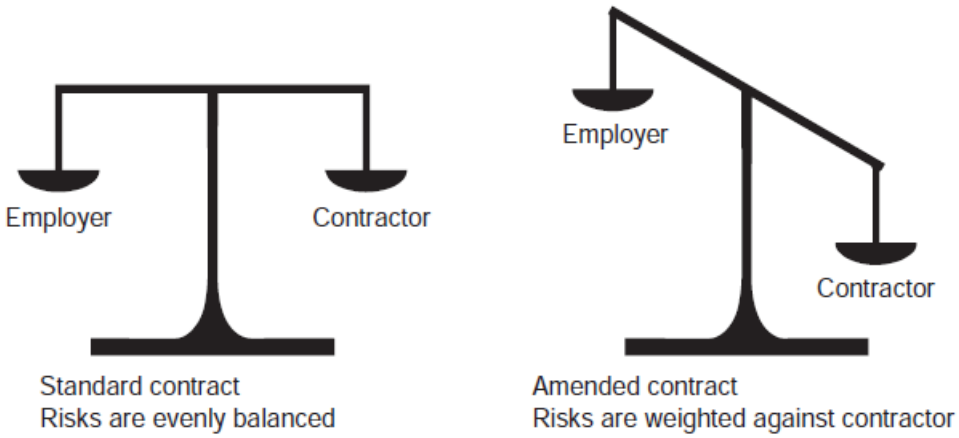


Figure 6 - Risk allocation based on standard form vs. amended contract (Mason, 2016)

Cumberledge, et al. (2008) found that based on an earlier version of the JBCC PBA Contractors frequently felt that most of the risk is shifted onto the Contractor from the Employer, probably as a result of bespoke amendments made to the contract, with their respondents indicating that 74% of the contracts they entered had changes made to the clauses. Unfortunately the market often dictates whether Contractors are in a position to price for the above illustrated increased risk transferred from the Employer, which could lead to undercutting of the price that ought to have been charged for the acceptance of the transfer of the risk; which ultimately brings other risks, like sub-standard quality of work, delays, and so on back to the Employer. As such, Employers are advised to critically analyse the proposed bespoke amendments they plan to make to standard form contracts, as the result of the amendments may be further reaching than what the Employer planned and may have negative unintended consequences.

3.8 Literature review conclusion

Contracts are part of everyday life and relate to one party making an offer and another party accepting the offer, the likes of which is not required to be reduced to writing for a valid contract to exist. However, in construction projects the process of contracting for work is more complex and requires (for the protection of) both parties to the agreement to sign the contract; with the commencement date of the contract typically being the date when the offer is accepted (which can be by way of a letter of acceptance), as this proves

the existence of the agreement and protect the parties' agreement, with specific reference to what service is delivered, how such service is delivered, the allocation of risk as well as to mitigate any uncertainty.

Risks in construction projects are nearly endless, but can be categorised and is limited for the purpose of this research report to determine what the risks are due to:

i. Risk by Employer's own actions (owner's risk);
ii. Risk by owner's Project Manager (NEC4 ECC) / Principal Agent (JBCC PBA 6.2) / Engineer actions (FIDIC Red Book 2017) (Engineer's risk, consultant's risk);
iii. Construction related risks.

Based on the literature review undertaken, it is evident that there are many different procurement routes to use for an Employer to solicit the construction work of a project in order to deliver the required end product; and that many different construction contracts are available worldwide to deliver these projects.

The option of soliciting the work through the traditional procurement route (design prepared by the employer and the quantities being re-measurable) provides a fair and relatively equal split of risks between an Employer and Contractor, with certain pitfalls and advantages; them being that the Employer is required to provide a detailed design and in the second case that certain scope changes can relatively easily be made to the contract, as the quantities are re-measurable and the rates for individuals items known for the most part.

In a South African context (for the general building market) it has been found that the following is applicable:

1. Private Employers (commercial developers) are likely to procure through the basis of providing the design and contracting with re-measurable BOQ's;
2. The JBCC PBA is by far and away the standard form contract most likely to be used, but that the other standard form contracts the research report focusses on are in fact used (for the above) and are also suited for the work intended, these standard form contracts are:
    a. Institution of Civil Engineers, NEC®4 – Engineering and Construction Contract, Option B: Priced Contract with Bills of Quantities, 4th Edition – June 2017; with the following secondary option clauses: X1, X2, X4, X5, X7, X11, X13, X14, X16 and W1 (as these secondary option clauses

make for the most appropriate comparison to the other contracts in question);

b. Fédération Internationale des Ingénieurs-Conseils (FIDIC) (International Federation of Consulting Engineers) – Conditions of Contract for Construction – For Building and Engineering Works Designed by the Employer, 2nd Edition – 2017.

It was also found that there are certain advantages to standard form construction contracts, these being that:

i. The risk profile is defined by a known set of terms and conditions;
ii. The procurement period is reduced, as the terms and conditions of standard forms of contract are known;
iii. A reduction of cost and time is possible.

Employers are however advised to be careful when making changes to the standard form contracts, as the risk profile of the contract to the advantage of the Employer generally means that there is a resultant change in the cost of the works, as the Contractor prices for this change in the risk profile.

4 BACKGROUND ON AND CRITICAL REVIEW OF THE JBCC PBA

4.1 Introduction to the JBCC

The Joint Building Contracts Committee was formed in 1972 (Construction Industry Development Board (CIDB), 2005) and published the first version of the PBA and its related suite of documents in 1991, the first new major building contract to be issued in South Africa in nearly sixty years. Subsequent to this the JBCC registered as a non-profit company in 1997 (www.jbcc.co.za, 2019), with the substantially revised and updated 'Series 2000' suite of documents issued in 1998. Due to changing legislation and market conditions new editions of the Series 2000 were issued in 2000, 2003, 2004 and again in 2005 with the publication of edition 4.1 – the last in the Series 2000.

The CIDB insisted that the PBA be brought in line with international best practice and in consultation with the National Department of Public Works the 5th edition was issued in 2007, which for the first time included for Contract Data in lieu of the schedule and split the contract into the different relationships, being Employer-Contractor (EC) and Contractor-Employer (CE), as well as included many of the items previously contained in the preliminaries and lastly remove the State provisions from the document (Segal, 2018).

The PBA sixth edition was published in 2014; however, this version was promptly retracted owing to the poor quality and plethora of errors, however shortly after edition 6.1 was published as a replacement (Segal, 2018). A key change from edition 6/6.1 to edition 6.2 as published in May 2018 was the omission of Works Completion as a state of completion as this was found not to serve the purpose it was intended for. Another change was the move away from two distinct Contract Data documents (that is the EC and CE) to a single consolidated document and the drafting of the document in 8 distinct sections. A new requirement in the Contract Data is for the Employer (by way of its agents) to identify the requirements for practical completion, for the Contractor to be able to price for these (sometimes onerous) requirements. Other key changes include the alignment with the Consumer Protection Act 68 of 2008, alignment with the latest Construction Regulations and the latest revisions to the Health and Safety Act of 1993.

In addition to the PBA, the JBCC publishes a Minor Works Agreement (MWA) which is intended for small scale low complexity building works, with the same first being published in 1999. In addition to these main Contractor contracts, the NSSA (nominated / selected subcontract agreement) completes the agreements in the PBA and MWA and is

intended for agreement between the Contractor and either the nominated or selected subcontractor. In support of these documents, the JBCC publishes guides and other supporting documents.

The constituent organisations that form the JBCC are listed as follows:

i. Association of Construction Project Managers (ACPM)
ii. Association of South African Quantity Surveyors (ASAQS)
iii. Consulting Engineers of South Africa (CESA)
iv. Master Builders South Africa (MBSA)
v. South African Black Technical and Allied Careers Organisation (SABTACO)
vi. South African Institute for Architectural Technologies (SAIAT)
vii. South African Institute of Architects (SAIA)
viii. South African Property Owners Association (SAPOA)
ix. Specialist Engineering Contractors Committee (SECC)

The objective of the JBCC was and still is to formulate a set of standardized contractual documents which would support an efficient and effective building process (Segal, 2018).

The JBCC documents portray the consensus view of the constituent members and are published with three fundamental objectives:

i. Compiled in the interest of standardisation;
ii. good practice; and
iii. an equitable distribution of contractual risk to the parties (Construction Industry Development Board (CIDB), 2005) ((The Joint Buildings Contracts Committee (JBCC), 2018))

It has to be understood though, that the good practice referred to in the preface of the JBCC PBA is limited to the design by Employer with bills of quantities general contracting procurement strategy only, and should be read with the understanding that the authors of the document are subjective in their view that this is good practice, it stands to reason that this procurement strategy is not good practice under all circumstances.

4.2 Risks under the JBCC PBA 6.2

4.2.1 Risks due to the obligations of the Employer

The Employer is one of the two Parties to the Contract and is so identified in the Contract Data. The JBCC PBA 6.2 includes in the structure of the contract for an entire clause (clause 12) indicating the obligations of the Employer (which curiously in is repeated information in certain instances like clauses 12.1.1 / 11.5; 12.1.7 / 25.10; 12.1.9 / 17.1.17 and 19.7 as well as in the case of: 12.1.13/14.5 and/or 15.5), Table 7 shows the obligations of the Employer as covered in clause 12:

Table 7 – JBCC PBA 6.2 summary of the Employer's obligations (as quoted from the contract)

Clause	**Role**
12.1.1 [11.5]	*"Provide a guarantee for payment [11.5], where applicable [CD]*
12.1.2	*Record specific requirements [CD] where the existing premises will be in use and occupied during the execution of the works, including restriction of working hours [CD]*
12.1.3	*Record and describe relevant natural features and known services [CD] where the Contractor shall be responsible for their preservation*
12.1.4	*Define any restrictions to the site or areas that the Contractor may not occupy [CD]*
12.1.5	*Give possession of the site to the Contractor on the agreed date [CD]*
12.1.6	*Effect and keep in force insurances in the joint names of the parties, where the Employer is responsible for providing insurances [CD]*
12.1.7 [25.10]	*Make payments by the due date [25.10] [CD]*
12.1.8	*Make advance payments, where required [CD]*
12.1.9 [17.1.17 and 19.7]	*Permit reasonable access to the works by the Contractor and/or subcontractors subsequent to practical completion to fulfil outstanding obligations [17.1.17 and 19. 7]*
12.1.10	*Supply free issue [CD] to suit the programme*
12.1.11	*Define the extent of work to be carried out by direct Contractors [CD]*
12.1.12	*Ensure that the Principal Agent and/or agents provide adequate construction information timeously to the Contractor*

Clause	Role
12.1.13 [14.5 and/or 15.5]	*At the Employer's discretion make direct payment where the Contractor has failed to honour a n/s subcontract payment advice after notice of default by a subcontractor to the Principal Agent. The Employer-and the Contractor [14.5 and/or 15.5]"*

Segal (2018) departs from the PBA 6.2 Employer's obligations (as covered in clause 12) in his commentary on the PBA 6.2, by summarising what he considers to be the "*main obligations*" of the Employer, which are listed as:

i. "*The obligation to appoint a Principal Agent and other agents;*
ii. *The obligation to hand over the site;*
iii. *The obligation to provide a guarantee for payment;*
iv. *The obligation to make payments in accordance with the agreement;*
v. *The obligation to provide construction information and instructions.*"

Taking the above into consideration and on analysis of the contract it is found that the JBCC PBA 6.2 has a clause which lists the Employer and the Contractor's obligations, but that the list is not a complete list of the obligations the Parties are bound to. Following my analysis of the JBCC PBA 6.2, I have tabulated in Table 8 the exhaustive list of express mandatory obligations of the Employer (note that I have italicised the copy of certain sub-clauses from clause 12 to indicate which of those listed remain):

Table 8 - JBCC PBA 6.2 summary of the Employer's mandatory obligations following an analysis of the contract

Clause	Role
2.1	Comply with the law, obtain permits, planning, building or similar permissions and pay charges for the works
2.2	Communicate in the language of the contract in a format that can be read, copied and recorded
3.4	Act in good faith should any provision of the agreement be unenforceable
5.2	Sign the original agreement
5.3	Identify persons authorised to act on behalf the Employer in the construction information
6.5	Appoint another Principal Agent and/or agent on notice from the Contractor

Clause	Role
6.6	Do not interfere or prevent the Principal Agent and/or agents from exercising fair and reasonable judgement
8.1	Take full responsibility for the works from the date for the certificate of practical completion
10.1	Effect and keep insurances listed in the joint names of the parties, if so required
10.2	Effect and keep insurances for work in sections, alterations and additions
10.3	Provide proof of insurances to the Contractor
10.7	Give notice to the insurer to clarify the status of the insurance
10.9	Inform insurer of relevant changes in terms of the agreement
11.5.1	Provide the Contractor with a guarantee for payment
11.5.2	Keep the guarantee valid and enforceable
11.7	Adjust the guarantee for payment and provide written proof of the adjustment
11.8	Return the original security form to the Contractor
11.9	Pay the amount unjustifiably called from the security including interest to the Contractor
12.1.2	*Record specific requirements [CD] where the existing premises will be in use and occupied during the execution of the works, including restriction of working hours [CD]*
12.1.3	*Record and describe relevant natural features and known services [CD] where the Contractor shall be responsible for their preservation*
12.1.4	*Define any restrictions to the site or areas that the Contractor may not occupy [CD]*
12.1.5	*Give possession of the site to the Contractor on the agreed date [CD]*
12.1.10	*Supply free issue [CD] to suit the programme*
12.1.11	*Define the extent of work to be carried out by direct Contractors [CD]*
12.1.12	*Ensure that the Principal Agent and/or agents provide adequate construction information timeously to the Contractor*

Clause	Role
14.7.1	Incur the cost of completing a nominated subcontract due to default or insolvency of the nominated subcontractor, default by the Employer him/herself, or the Principal Agent and/or other agents
15.7.1	Incur the cost of completing a selected subcontract due to default by the Employer him/herself, or the Principal Agent and/or other agents
19.7	Allow access for installation work by others
25.10	Pay the amount certified
25.17	Consent to the jurisdiction of any court of law for the purpose of provisional sentence in relation to a payment certificate
29.2	Notify the Contractor of its intension to terminate due to a specified default by the Contractor
29.7	Notify the Contractor of the Employer's recovery of damages from the Contractor
29.9	Recover from the Contractor, where applicable from the items listed
29.21	Notify the Contractor of contemplation of termination
29.21.2	Inform the insurer and the Contractor of the termination of the agreement
29.27	Arrange appropriate insurances to suit the stage of completion of the works
30.3	Notify the Contractor of referral of the dispute to adjudication
30.4	Include in the notice for adjudication the scope of the dispute and the relief sought by adjudication
30.7.5	Agree the rules for arbitration with the Contractor and arbitrator if the applicable rules are not stated in the Contract Data
30.8.1	Notify the Contractor of the resumption of adjudication or arbitration proceedings
30.8.2	Agree the appointment of a mediator, the procedure and the status of the outcome of mediation
30.8.3	Bear its own cost concerning mediation and equally share the cost of the mediator with the Contractor

Clause	Role
30.11	Continue to perform its obligations in terms of the agreement

Table 9 reflects my own analysis of the JBCC PBA 6.2 and is an exhaustive list of the Employer's express discretionary obligations:

Table 9 – JBCC PBA 6.2 summary of the Employer's discretionary obligations following an analysis of the contract

Clause	Role
2.3	Deliver to and serve the Contractor legal action at its physical address
2.3	Notify the Contractor of a change in physical address
5.3	Notify the Contractor of a change of person authorised and/or agent to act on behalf of the Employer
6.2	Appoint agents to deal with specific aspects of the works
10.5	Increase the cover of the works insurance
10.10	Effect insurance for aspects not insured after practical completion
11.4.1	Hand over the site and withhold certain payment
11.4.2	Terminate the agreement
14.5	Instruct the Principal Agent to certify direct payment to a nominated subcontractor and recover such amount from the Contractor
14.7.2	Recover expense and loss [27.2.8] due to the reasons stated
15.5	Instruct the Principal Agent to certify direct payment to a selected subcontractor and recover such amount from the Contractor
24.2	Levy a penalty for late or non-completion by the Contractor and instruct the Principal Agent to notify the Contractor of such levy
25.5	Accept (or not accept) a security other than the guarantee for advance payment
27.2	Recover expense and/or loss incurred or to be incurred from the listed items
27.3	Recover the amount owed form any of the items listed

Clause	Role
27.4	Exercise rights in terms of the security where the Contractor has been liquidated or where the agreement is terminated
29.1	Give the contract notice of the intention to terminate where the Contractor has failed to do as listed
29.3	Notify the Contractor of termination of the agreement
29.4	Employ others to safeguard the works, complete any outstanding work and rectify defects on termination of the Contractor
29.5	Use materials and goods and temporary structures on the site following termination
29.6	Remove or sell temporary structures or construction equipment
29.7	Recover damages from the Contractor
29.8	Apply the penalty up to the date of termination where practical completion has passed
29.20	Notify the Contractor of intention to terminate for the reasons stated
30.1	Notify the Contractor of disagreement and attempt to resolve such disagreement with the Contractor
30.6.3	Notify the Contractor of referral of the dispute to arbitration
30.6.4	Notify the adjudicator and the Contractor of dissatisfaction of the adjudicator's determination
30.6.5	Notify the adjudicator and the Contractor of the adjudicator's breach of its obligation to deliver the determination
30.8	Refer a dispute to mediation

Each of the above identified obligations carries certain risk which is borne by the Employer, as its inaction on any of the mandatory obligations has a consequence – the following is a detailed review of each of the mandatory obligations and the consequential risks related to each.

Important note:

With the three forms of contract in question having wide-ranging and varying mandatory obligations assigned to the Employer, only the 'main obligations' as covered by Segal (2018) will be critically analysed in the main body of the report. The balance of the mandatory obligations are covered in the appendices.

4.2.1.1 Identify persons authorised to act on behalf the Employer in the construction information (Clause 5.3)

The Employer has an express obligation to identify the persons and/or agents that are authorised to represent him/her, with the agents being duly identified in the Contract Data. What is of further interest here is that the Employer is obliged to notify the Contractor if there are any changes to these persons and/or agents. It is absolutely essential that the Employer state what the level of authority is that these persons and/or agents enjoy, as the Contractor has every right to be made aware what an agent's authority is, this is owing to the fact that the Contractor is bound by instructions in terms of the contract by the Principal Agent (or duly authorised delegate in terms of clause 6.2). If any of these delegated agents issues instructions beyond their authority the Contractor has no obligation of performance of such an instruction, as the instruction is void owing to a lack of authority.

If the Employer fails to identify the required persons and/or agents in the construction information, it will be as if they are not party to the project.

4.2.1.2 Appoint another Principal Agent and/or agent on notice from the Contractor (Clause 6.5)

A reason for the Contractor to notify the Employer that he/she has issue with the Principal Agent is that the Principal Agent is required to perform its obligations with fairness as was ruled in the case of *Costain v Bechtel [2005] EWHC 1018* where the judge ruled that it is in fact the Project Manager's duty to act fairly and impartially in matters of assessment and certification; thereby balancing the rights between the Employer and the Contractor. Other reasons for the Contractor giving the Employer notice to appoint another Principal Agent is that the Principal Agent fails in its duties as required in terms of the contract between the Employer and the Contractor – these express mandatory obligations will be dealt with in detail in 4.2.2. The Employer's obligation in this case (that is of course if the notice from the Contractor is warranted) is to appoint another Principal Agent, failing which the Contractor will likely dispute the matter.

Should the Employer fail to appoint a new Principal Agent after the Principal Agent's service has been terminated it gives the Contractor grounds for termination in terms of clause 29.14.6: "*The Employer has failed to appoint another Principal Agent, and/or agents, where applicable*".Provide the Contractor with a guarantee for payment (Clause 11.5.1)

As part of a fair risk sharing model under the JBCC PBA 6.2, the Employer is obliged to provide the Contractor with a guarantee for payment (in terms of the JBCC Guarantee for Payment) from an institution approved by the Contractor if the Employer requires the Contractor to waive its lien over the site. If the Employer has made partial or no payment within 14 days of the payment certificate, or if the Principal Agent has not issued a payment certificate (Segal, 2018) the Contractor has the right to call on the guarantee for payment.

The maximum amount payable under the guarantee shall be for the guaranteed sum as stated in the guarantee, with the guarantor undertaking to pay the Contractor the sum certified subject to the maximum amount guaranteed and the lodging of certain documents.

A failure by the Employer to obtain the guarantee for payment gives the Contractor the right of refusal to waiver its lien over the site. A failure by the Employer in terms of this obligation gives the Contractor the right to suspend the works in terms of clause 11.6 after giving 10 days' notice. Additionally, the Contractor has the right to terminate the agreement in terms of clause 29.14.1: "*The Employer has failed to provide and maintain a guarantee for payment…*" and 29.15 "*…the Contractor shall give notice to the Employer…to be remedied within ten (10) working days of such notice*".

4.2.1.3 Keep the guarantee valid and enforceable (Clause 11.5.2)

The Employer's obligation is simple in that he/she is required to keep the guarantee valid and enforceable and provide a replacement guarantee at least 20 days before the expiry of such guarantee.

A failure by the Employer in terms of this obligation gives the Contractor the right to suspend the works in terms of clause 11.6 after giving 10 days' notice. Additionally, the Contractor has the right to terminate the agreement in terms of clause 29.14.1: "*The Employer has failed to provide and maintain a guarantee for payment…*" and 29.15 "*…the Contractor shall give notice to the Employer…to be remedied within ten (10) working days of such notice*".

4.2.1.4 Adjust the guarantee for payment and provide written proof of the adjustment (Clause 11.7)

The Employer shall adjust the guarantee if the contract value exceeds the contract sum by more than 10%, with written proof of such adjustment being provided by the Employer to the Contractor.

A failure by the Employer in terms of this obligation gives the Contractor the right to suspend the works in terms of clause 11.6 after giving 10 days' notice. Additionally, the Contractor has the right to terminate the agreement in terms of clause 29.14.1: "*The Employer has failed to provide and maintain a guarantee for payment…*" and 29.15 "*…the Contractor shall give notice to the Employer…to be remedied within ten (10) working days of such notice*".

4.2.1.5 Return the original security form to the Contractor (Clause 11.8)

The Employer keeps the original security form (if the Contractor is stated in the Contract Data to provide the insurance) in its safe keeping and returns the same to the Contractor within 10 working days to the Contractor from its expiry.

4.2.1.6 Give possession of the site to the Contractor on the agreed date [CD] (Clause 12.1.5)

One of the most important obligations of the Employer is that of giving the Contractor access to the site, and in the case of the JBCC PBA 6.2 the strong right of possession of the site for the Contractor to commence the works. According to Segal (2018) the Contractor is obliged to maintain the site in the condition he/she found it, and in addition to that he/she is responsible for any loss, damage and any improvements to it, such improvements may include buildings, fences, landscaping and the like and in accordance with clause 8.1 such responsibility rests on the Contractor whether or not any loss or damage is directly attributable to anything done or not done by the Contractor.

In the South African law, the Contractor enjoys a lien over the site subsequent to the Employer giving the Contractor possession of the site. According to Segal (2018) a Contractor's lien is its "*right to retain possession of the site until the Employer has paid to him/her moneys which are lawfully due to him/her (Ploughall (Edms) Bpk v Rae 1971 (1) SA 887 (W)). But he/she may exercise a lien only in respect of debt that is due, not in respect of some future debt (Conress (Pty) Ltd and another v Gallic Construction (Pty) Ltd 1981 (3) SA 73 (W)). The Contractor does not acquire ownership of the site; and*

remains liable for loss or any damage to the site and the works while he/she remains in occupation and exercising its lien."

Failure by the Employer to give possession to the site on the date planned shall result in a notification for a delay and subsequently a claim for additional time and cost (cost in terms of clause 26.7) by the Contractor, all in accordance with the right that the Contractor enjoys in terms of clause 23.2.1: "*Delayed possession of the site*".

Outright failure by the Employer to give the Contractor possession to the site would ordinarily result in the works contracted not being executed and the Contractor terminating the agreement in terms of its right that he/she enjoys in terms of clause 29.14.2: "*The Employer has failed to give possession of the site to the Contractor*". Depending on the terms and conditions agreed in the contract, such termination could result in the Contractor submitting a claim against the Employer for a loss of profit which the Contractor claims he/she could have made should he/she have executed the works.

4.2.1.7 Ensure that the Principal Agent and/or agents provide adequate construction information timeously to the Contractor (Clause 12.1.12)

The JBCC PBA 6.2 defines construction information as: "*All information issued by the Principal Agent and/or agents including this agreement, specifications, drawings, schedules, notices and contract instructions required for the execution of the works*"

Based on my experience of projects in the current projects environment; the risk of delays in the provision of construction information is likely to be one of the Employer's biggest risks, however in saying that it is also a risk that is most entirely attributable to the Employer's decision-making process and the urgency with which they expect income from the project's end product; be it a shopping centre, filling station, office complex, mixed-use development or any other type of construction development.

Often the professional team is provided with little or no income for their work at risk during the short design (or pre-construction) stage(s) of the project, without the different pre-construction stages (as defined by either the architecture, Engineering, quantity surveying and other councils) prescribed processes being properly followed, nor with the deliverables for the different pre-construction stages being fully delivered (much to the Employers ire…); as such the design professionals are more often than not preparing detailed designs not during the last stage of the pre-construction stages, but during the construction stage. This has the effect of disenchantment among design professionals as the construction stage does not particularly lend itself to providing them with adequate

time to prepare, coordinate and issue the necessary construction information to the Contractor at the time the Contractor necessarily wants the information (the Contractor is required to prepare a schedule of outstanding construction information in terms of clause 12.2.11).

My opinion of this clause is that this mechanism of only developing construction information during construction creates for a large amount of risk to all parties involved in the construction project, as this term in the contract provides a very effective mechanism for the Employer to fast-track its decision-making process pre-construction. However in saying that the fact that the clause allows for construction information to effectively be developed during the construction phase of the project (as opposed to pre-construction in the last stage) prevents design consultants from providing the quantity surveyor with enough thoroughly coordinated and finalised information for the procurement documentation and the budget and most certainly for the Contractor to base its programme on realistically.

Failure by the Employer to ensure that its principle agent and other agents provide construction information timeously shall result in a notification for a delay and subsequently a claim for additional time and cost (cost in terms of clause 26.7) by the Contractor, all in accordance with the right that the Contractor enjoys in terms of clause 23.2.5: "*Late or incorrect issue of construction information*".

4.2.1.8 Pay the amount certified (Clause 25.1)

Among all of the Employer's implied and express obligations, the payment of the monies due for the Contractor's obligations is undoubtably the most important of all of these obligations (Hughes, et al., 2015) and (Segal, 2018).

The payment certificate issued by the Principal Agent is a liquid document "*wherein a debtor acknowledges over its signature, or that of a duly authorised agent, its indebtedness in a fixed and determined sum of money*" (Segal, 2018), as was ruled in the seminal case of *Inter-Union Finance Ltd v Franskraalstrand (Edms) Bpk and Others 1965 (4) SA 180 (W)*. According to Segal (2018) the building contract, which is a *locatio conducto operis* (the letting and hiring of work) the payment of interim payment certificates is a deviation from the common law principal of the payment being effected when the work is done, however construction contracts typically addresses this issue, as the Contractors do not necessarily have the cash at hand to fund the entire construction

contract for the Employer only to be paid at the end. This does however not mean that the work has been accepted or to the required standard.

Failure by the Employer to pay the amount due by the due date gives the Contractor the right in terms of clause 28.1.3 to suspend the works, the result of such suspension shall be in terms of clause 28.4 which gives the Contractor the right to additional time and cost. The JBCC PBA 6.2 has a mechanism to overcome this issue by way of the payment guarantee which the Contractor can call on (of course only if the same was provided by the Employer) in order to obtain the moneys due.

Should the Employer not correct its default of non-payment to the Contractor, the Contractor has the right to terminate the agreement in terms of clause 29.14.5.

4.2.2 Risks due to the obligations of the Principal Agent

Following my analysis of the JBCC PBA 6.2, I have tabulated in Table 10 the exhaustive list of express mandatory obligations of the Principal Agent (being an agent of the Employer, but not a party to the contract):

Table 10 - JBCC PBA 6.2 summary of the Principal Agent's mandatory obligations (as determined from the contract)

Clause	Role
5.2	Provide the Parties each with a copy of the original agreement
5.2	Hold the original signed agreement
5.6	Provide copies of drawings, bills of quantities and other construction information
6.2	Notify the Contractor of delegation of authority
6.3	Declare conflict of interest
8.6	Determine the cost of making good physical loss or repairing damage for the listed reasons where the Contractor is not responsible
11.3	Certify recoupment of the advance payment
12.2.6	Monitor progress of the works
12.3	Hold regular meetings to monitor the progress of the works
12.3	Record and timeously distribute minutes of such meetings

Clause	Role
13.1.1	Point out boundary pegs or beacons identifying the site and the datum level
13.1.2	Define setting out points and levels required for the execution of the works
13.2.4	Instruct the Contractor indicating how to proceed with the works
14.1.1	Prepare tender documents for nominated subcontractors
14.1.2	Call for nominated subcontract tenders
14.1.3	Scrutinise the received nominated subcontract tenders for compliance in consultation with the Contractor
14.1.4	Instruct the Contractor to appoint a nominated subcontractor
14.5	Certify direct payment to a nominated subcontractor on instruction from the Employer
14.6	Instruct the Contractor to notify a nominated subcontractor of continued default
15.1.1	Prepare tender documents for selected subcontractors
15.1.2	Call for selected subcontract tenders
15.1.3	Scrutinise the received selected subcontract tenders for compliance in consultation with the Contractor
15.1.4	In consultation with the Contractor choose the compliant tenderer for appointment as a selected subcontractor
15.5	Certify direct payment to a selected subcontractor on instruction from the Employer
15.7.3	Instruct the Contractor to appoint another subcontractor if the Contractor terminates a selected subcontract
19.1.1	Inspect the works to give the Contractor direction on the required standard of work required to achieve practical completion
19.3	Inspect the works in the period stated for practical completion
20.2	Issue completion certificates for sectional completion
21.4	Notify the Contractor of outstanding items on the list for completion

Clause	Role
21.5	Inspect the works following notification from the Contractor that the outstanding items on the list for completion have been attended to
21.6	Inspect the works for defects
21.7.3	Notify the Contractor of status of defect correction related to list for final completion
21.8	Issue certificate of final completion
23.7	Grant in full, reduce or refuse the working days claimed by the Contractor within 20 days of receipt of the claim
24.2	Determine the penalty
24.3	Include the penalty in regular interim payment certificates
25.1	Prepare cash flow statements
25.1	Make a fair estimate of the work completed
25.2	Issue payment certificates to the Contractor
25.7	Issue the statements, notifications and calculations listed
25.9	Certify 100% of the amount in the final account in the final payment certificate
25.15	Issue final payment certificate within 7 days of acceptance of the final account
25.16	Issue interim payment certificates for amount not disputed in the final account
26.1	Determine the value of adjustments to the contract value in cooperation with the Contractor
26.3	Omit provisional sums and add value of the work executed
26.7	Make fair assessment of a claim submitted
26.7	Adjust the contract value within 20 days of receipt of a claim submitted
26.9	Make adjustments and calculations as listed
26.10	Issue the final account within 60 days of practical completion
26.13	Issue final payment certificate within 7 days of acceptance of the final account

Clause	Role
27.1	Issue a recovery statement with each payment certificate
28.4	Revise the date for practical completion on resumption of the works subsequent to suspension by the Contractor
28.4	Adjust the contract value on resumption of the works subsequent to suspension by the Contractor
29.2	Notify the Contractor of the Employer's intention to terminate if the Employer instructs the Principal Agent to do so
29.24.3	Notify the Contractor to remove surplus materials and goods from the site
29.25	Prepare items listed on termination

The limited critical review will focus on the mandatory obligations only, where the below table summarises the discretionary obligations, however these will not be reviewed in any further detail, as they may or may not be applicable depending on the situations during the course of the contract.

According to my own analysis Table 11 is a summary of the Principal Agent's express discretionary obligations for the JBCC PBA 6.2:

Table 11 – JBCC PBA 6.2 summary of Principal Agent's discretionary obligations

Clause	Role
4.2	Consent to a nominated subcontractor ceding or assigning rights and obligations
12.2.2	Determine whether there are errors or discrepancies in the priced document which require the contract sum to be balanced
17.1	Issue contract instructions for the items listed
17.3	Notify the Contractor to proceed with due diligence in carrying out a contract instruction
21.2	During the defects liability period instruct the Contractor to progressively attend to items that are apparent defects
23.5	Extend the period for submission of a claim by the Contractor

Clause	Role
26.4	Approve actual amounts paid plus 10% for contract instructions as listed
26.12	Extend the period for resolution of the final account
29.17.2	Agree a period for the Contractor to remove materials and goods from the site where the Contractor has terminated and requested extension

Each of the above identified obligations carry certain risk which is borne by the Employer, as its appointed Project Manager's inaction on any of the mandatory obligations has a consequence – the following is a detailed review of each of the mandatory obligations and each's consequential risks.

Important note:

With the three forms of contract in question having wide-ranging and varying mandatory obligations assigned to the Principal Agent / Project Manager / the Engineer, the following comparison is based on those obligations as covered by Palmer (2006) in his comparison of the same obligations.

4.2.2.1 Point out boundary pegs or beacons identifying the site and the datum level (Clause 13.1.1)

Although the Principal Agent is named in the PBA to point out the boundary pegs or beacons identifying the site and the datum levels Segal (2018) contends that this an action that the Principal Agent is best advised to delegate to a registered land surveyor (in terms of clause 6.2), this obligation does not extend to the Principal Agent being required to verify the Contractor's setting out; as and the consequences of it is entirely the Contractor's responsibility in terms of clause 13.2.1 and as confirmed in the case of *Fritsch v Eckrats (Pty) Ltd t/a Wally Pools 1990 (3) SA 242 (N)*.

Failure by the Principal Agent to provide the Contractor with the boundary pegs or beacons identifying the site and the datum levels gives the Contractor the right to a claim for additional time and related expenses in terms of clause 23.2.5: "*late or incorrect issue of construction information.*"

4.2.2.2 Define setting out points and levels required for the execution of the works (Clause 13.1.2)

Refer to 4.2.2.1.

4.2.2.3 Inspect the works to give the Contractor direction on the required standard of work required to achieve practical completion (Clause 19.1.1)

The PBA defines Practical completion as follows: "*The stage of completion as certified by the Principal Agent where the works, or a section thereof, has been completed and is free of patent defects other than minor defects identified in the list for completion and can be used for the intended purpose*", according to Segal (2018) this a departure from the previous definition of practical completion where "*in the opinion of the Principal Agent*" the determination was made as to whether the works were substantially complete and could effectively be used for the intended purpose. As such the Contract Data now includes for space for the Principal Agent to describe in sufficient detail what the standard of practical completion is that is required.

This clause requires the Principal Agent to inspect and give the Contractor direction as to what the standard of work is that is required from him/her to achieve practical completion. Segal (2018) contends that it is the duty of the Principal Agent to "*ensure that the Contractor complies with its contractual obligations*". As was ruled in the *Strjdom Park Extension 6 (Pty) Ltd v Abcon (Pty) Ltd 1998 (4) SA 844 (SCA)* case it is not the duty of the Principal Agent to point out deficiencies as they occur.

In terms of clause 17.1 the Principal Agent is required to issue an instruction to the Contractor subsequent to each inspection in order to record any and all items that he/she found during its inspection, while also instructing the Contractor how to deal with such items.

Failure by the Principal Agent would result in the Contractor enjoying the right to claim for additional time and cost in terms of clause 23.2.7: "*late appointment of a subcontractor…*", but only in an instance where the Principal Agent does not approve of the Contractor's work and could have reasonably provided it with direction, as is required.

4.2.2.4 Inspect the works in the period stated for practical completion (Clause 19.3)

In terms of clause 19.2, and after the Contractor has completed its obligation to do a self-inspection of the works, to ensure that the works is to the standard of work required and at such a state of completion in order to achieve practical completion he/she gives the Principal Agent at least 5 working days' notice for the anticipated date for the inspection for practical completion.

In terms of this clause 19.3 the Principal Agent shall inspect the works within the period stated in the Contract Data and subsequent to such inspection issue to the Contractor a "*list for practical completion where the works has not reached practical completion*". List for practical completion is defined in the PBA as follows: "*A comprehensive and conclusive list that may include marked up drawings and photographs issued by the Principal Agent after the inspection of the works for practical completion, where practical completion has not been achieved, listing the defects and/or outstanding work to be completed to achieve practical completion*"

This process is repeated until all the items on the list for practical completion "*have been dealt with satisfactorily*"; subsequent to which the practical completion certificate is issued in terms of clause 19.3.2.

If the works where at state where no list for practical completion is issued the certificate for practical completion is issued in terms of clause 19.3.3.

Failure by the Principal Agent to fulfil its obligations in terms of its obligation to either issue the list for practical completion or the practical completion shall give the Contractor its rights in terms of clause 19.4: "*Should the Principal Agent not issue a list for practical completion or the updated list within five (5) working days after the inspection period, or the certificate of practical completion, [19.3] the Contractor shall give notice to the Employer and the Principal Agent. Should the Principal Agent not issue such list within a further five (5) working days of receipt of such notice, practical completion shall he/she deemed to have been achieved on the date of such notice and the Principal Agent shall issue the certificate of practical completion forthwith*"

4.2.2.5 Grant in full, reduce or refuse the working days claimed by the Contractor within 20 days of receipt of the claim (Clause 23.7)

In order to arrive (in this report) at a point where the above requirement can be discussed it is necessary to first highlight what the different reasons are for which either additional

time or additional time and cost may be claimed for by the Contractor; following which an explanation of the process the Contractor is obliged to follow will be described.

Under the JBCC PBA 6.2 there are several reasons for which the Contractor can claim for additional time without additional compensation, these are listed in clause 23.1 (a detailed analysis of each of these reasons is beyond the scope of this report, however Segal (2018) covers each topic in some detail):

"*23.1.1 Adverse weather conditions*

23.1.2 Inability to obtain materials and goods where the Contractor has taken reasonable steps to avoid or reduce such a delay

23.1.3 Making good physical loss and repairing damage to the works [8.2] where such risk is beyond the reasonable control of the parties

23.1.4 Late supply of a prime cost amount item where the Contractor has taken reasonable steps to avoid or reduce such delay

23.1.5 'Exercise of statutory power by a body of state or public or local authority that directly affects the execution of the works

23.1.6 Force majeure"

Under the JBCC PBA 6.2 there are several reasons for which the Contractor can claim for additional time with additional compensation, these are listed in clause 23.2 (a detailed analysis of each of these reasons is beyond the scope of this report, however Segal (2018) covers each topic in some detail):

"*23.2.1 Delayed possession of the site [12.1.5]*

23.2.2 Making good physical loss and repairing damage to the works [8. 5] where the Contractor is not at risk

23.2.3 Contract instructions [17.1—2] not occasioned by the Contractor's default

23.2.4 Opening tip and testing of work and materials and goods where such work is in accordance with the agreement [17.1.6]

23.2.5 Late or incorrect issue of construction information [12.1.12; 13.2.3]

23.2.6 Late supply of free issue, materials and goods for which the Employer is responsible [12.1.10]

23.2.7 Late appointment of a subcontractor in terms of the agreed programme where the Contractor has taken reasonable steps to avoid or reduce such delay [14.4.1; 15.4.1]

23.2.8 Late acceptance by the Principal Agent and/or agents of a design undertaken by a selected subcontractor where the Contractor's obligations have been met [7.3]

23.2.9 An act or omission by a nominated subcontractor [14.0] or a direct Contractor [16. 0]

232.10 Insolvency or termination of a nominated subcontractor [14. 7.2]

23.2.11 Suspension or termination by a subcontractor due to default of the Employer, the Principal Agent and/or agents

23.2.12 Execution of additional work for which the quantity in the bills of quantities is not sufficiently accurate

23.2.13 Suspension of the works [28.0]"

It is curious that clause 23.2.7 provides a reason seemingly beyond the contract as a right for the Contractor to claim for an extension of time and associated cost, in that the reason refers to the agreed programme between the parties. Nowhere in the contract is there any reference to the contract being agreed, as such this clause bestows a right upon the contract which it ought not to enjoy by the letter of the contract.

In terms of clause 23.3 there are further reasons which the Contractor may be entitled to additional time and money – these are causes beyond the Contractor's control and which it could not reasonably have provided for.

Segal (2018) confirms that the Contractor only enjoys the right to notify and claim in the event that it acted in terms of clause 23.4.1 by taking all reasonable steps to avoid such delays; he further confirms the status in the PBA related to the double time bar where if in terms of clause 23.4.2 the Contractor does not submit its notice of its intention to claim within a certain period (reference is made to the cases of *Group Five Building Ltd 12 v Minister of Public Works and Land Affairs 1997 (3) SA 150 (C)* and *Edward L Bateman Ltd v C A Brand Projects (Pty) Ltd 1995 (4-) SA 128 (T)* where the Contractors did not submit their notices in time and ultimately lost their cases on court based on this) the Contractor forfeits its right to claim for either time or money in terms of clause 23.5.

In order for the Principal Agent to be able to assess the claim in terms of clause 23.7 the Contractor is required to state in terms of clause 23.6.1 "*the relevant clause on which the*

Contractor relies" and in terms of clause 23.6.2 "*the cause and effect of the delay on the current date for practical completion…*" and in terms of clause 23.6.3 "*the extension period claimed in working days and the calculation thereof*".

In terms of this clause 23.7 the Principal Agent is required to assess the claim submitted within 20 working days of receipt of the claim with the output of its assessment being either granting it in full, a reduction or refusal of the claim for the working days submitted. Along with this a determination in terms of clause 23.7.1 the Principal Agent gives the revised date for practical completion (only if additional working days is granted), in terms of clause 23.7.2 he/she identifies each event and the related clause for each of the revisions granted and finally in terms of clause 23.7.3 gives its reasons where the claim submitted is refused or reduced.

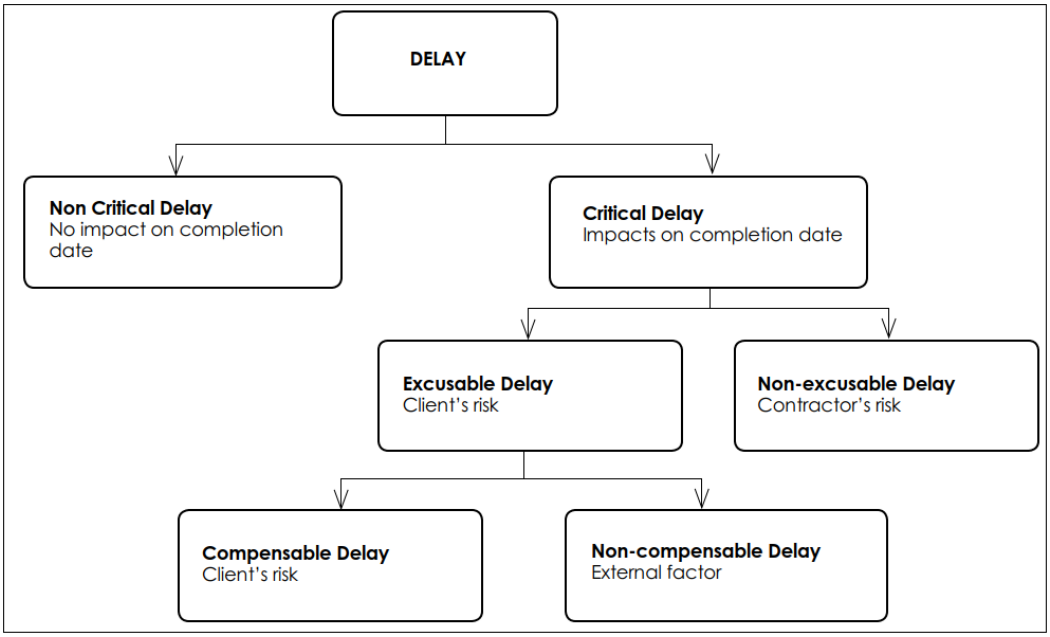


Figure 7 - Types of delays (Maritz & Prinsloo, 2016)

According to Maritz & Prinsloo (2016) the Principal Agent is required to determine the following in the first instance whether the delay is a non-critical or a critical delay, as is visually represented in Figure 7. If the delay is in fact a critical delay it has a negative impact on the completion date; from which the Principal Agent is required to determine whether the delay is excusable (client's risk) or non-excusable (Contractor's risk). If the critical delay was in fact an excusable delay (client's risk) the Principal Agent is required to determine whether the delay is compensable (for those reasons listed in clause 23.2) or non-compensable (due to an external factor like those listed in clause 23.1).

From their study Maritz & Prinsloo (2016) developed an invaluable decision tree framework (as shown in Figure 8) for use with the PBA, which is summarised as follows (for further detail on the subject the reader can study the above mentioned authors' article on the subject):

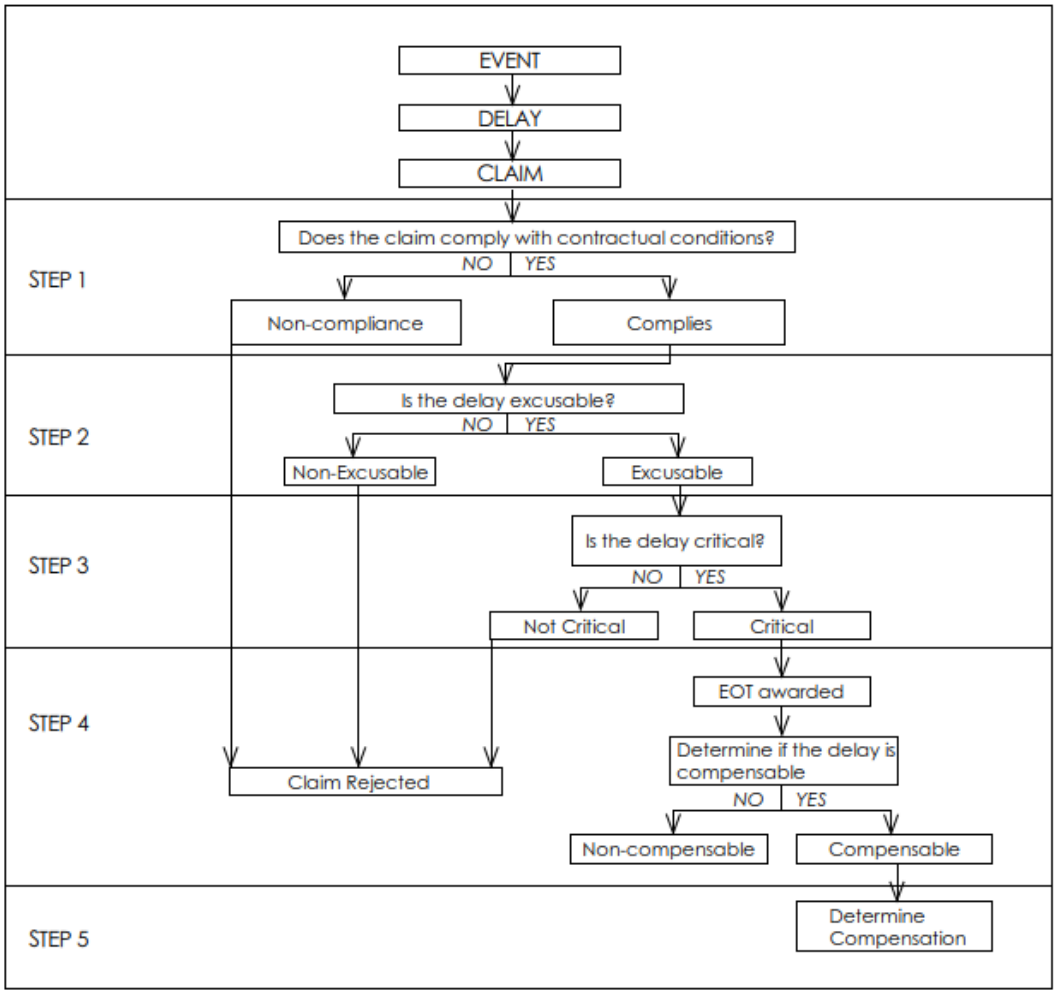


Figure 8 - Universal decision tree framework (Maritz & Prinsloo, 2016)

Failure by the Principal Agent to act in terms of clause 23.7 curiously deems the claim to be refused, with the only recourse that the Contractor enjoys in such an event being that it may give its notice of disagreement in terms of clause 30.1. In my opinion this is an excellent example of a poor project management principle which is included in a contract between two parties – it is incomprehensible that the Employer enjoys a right to the refusal of a claim submitted by the Contractor if its agent fails to act and prepare a determination of the same. In this instance the risk is heavily biased to cover solely the Employer; however, this may lead to disputes being raised by the Contractor.

A further criticism of the PBA is that it does not expressly allow for a reduction in the contract period, however Segal (2018) covers this topic in some detail in its book and makes reference to relevant cases influencing the common law principle.

4.2.2.6 Issue payment certificates to the Contractor (Clause 25.2)

Again, it is highly likely that the Principal Agent will delegate this obligation to the Quantity Surveyor in terms of clause 6.2.

In terms of the PBA the payment certificate is defined as follows: "*A certificate issued at regular intervals [CD] by the Principal Agent to the parties certifying the amount due and payable in terms of the JBCC payment certificate format*".

As found in the *Randcon (Natal) Ltd v Florida Twin Estates (Pty) Ltd 1973(4) SA 181 (D) at 185 D* case a payment certificate is a liquid document, both in the case of interim as well as final payment certificates and as ruled in the case of *Aveng Grinaker v MEC Department of Human Settlements (EL459/15) [2018] ZAECELLC 3; [2018] 3 All SA 466 (ECLD, East London) (5 June 2018)* judge Mageza ruled that the Principal Agent binds the Employer with the issue of a payment certificate and that the Employer thus is obliged to make the payment to the Contractor accordingly.

Each payment certificate shall include for the following (in terms of clause 25.3):

"*25.3.1 A fair estimate of the value of work executed*

25.3.2 A fair estimate of the value of materials and goods [25. 4; 25.5]

25.3.3 Security adjustment [11.1.2; 11.4.1]

25.3.4 Cost actuations, if applicable

25.3.5 The gross amount certified

25.3.6 The amount previously certified

25.3.7 Amounts due to either party in the recovery statement [27.1]

25.3.8 Tax

25.3.9 Interest amounts included in the recovery statement

25.3.10 Other non—taxable amounts

25.3.11 The net amount certified due to the Contractor or the Employer"

An in-depth review of each of the above items and the payment certificate process is beyond the scope of this report, for further reading refer to Segal (2018).

In terms of the obligation in clause 25.2 the certificate shall be issued on the date as stated in the Contract Data, failing which the Contractor enjoys the right to termination in terms of clause 29.14.7.

4.2.2.7 Certify 100% of the amount in the final account in the final payment certificate (Clause 25.9)

The final payment certificate is defined as follows in the PBA: "*The certificate issued by the Principal Agent after the issue of the certificate of final completion and after the final account has been agreed*", with the final account being defined as: "*The document prepared by the Principal Agent that reflects the final contract value of the works at final completion or termination.*"

The requirement on the Principal Agent in this clause is simple in that once the final completion certificate has been issued and the final account agreed the Principal Agent is required to issue the final payment certificate which shall be for the full contract value. As this final payment certificate is for any portion outstanding on the full contract value, it includes all adjustments in terms of clauses 26 (Adjustment of the contract value and final account) and 27 (Recovery of expense and/or loss).

If all the requirements for the final payment certificate to be issued have been met and the Principal Agent fails to fulfil its obligation the Contractor may be able to exercise its right in terms of clause 30.1 to give a notice of disagreement.

4.2.2.8 Issue final payment certificate within 7 days of acceptance of the final account (Clause 25.15)

In the instance where the certificate of final completion has been issued, the Principal Agent issues the final payment certificate to the Contractor and copies the Employer within 7 days of the agreement of the final account. As is detailed in 4.2.2.7 this is for 100% of the contract value.

Although the PBA is silent on the recourse for the Principal Agent in this regard, it is likely that the Contractor will give notice of disagreement in terms of clause 30.1.

4.2.2.9 Issue interim payment certificates for amount not disputed in the final account (Clause 25.16)

If the process of agreeing the final account with the Contractor is ongoing (refer to clauses 26 and 27) and there are certain amounts which have not been agreed on the

Principal Agent is required to keep on issuing monthly payment certificates in terms of clause 25.2 until the final payment certificate.

The Contractor has the right in terms of clause 29.14.7 to terminate the agreement if the Principal Agent does not issue such regular payment certificates; although it has to be said that it would be of very little use to the Contractor to terminate the agreement for such reason, he/she would be better advised to use the contract to its benefit to agree the final account or if the same cannot be agreed exercise its rights in terms of 26.12 and give its notice of disagreement and follow the procedures as laid out in clause 30 (Dispute resolution).

4.2.2.10 Determine the value of adjustments to the contract value in cooperation with the Contractor (Clause 26.1)

Segal (2018) confirms the provisions as laid down in the PBA for the difference between the contract sum and the contract value; where the:

i. Contract sum is the accepted tender amount which excludes for any adjustments; in other words, the amount the contract is signed on;
ii. Contract value refers to the amount that is initially equal to the contract sum, but which is subject to adjustments in terms of the agreement and which is finally concluded at final account.

It must be noted that this is not a process that the Principal Agent does in isolation, as the PBA requires the cooperation of the Contractor in this regard and safeguards the Contractor by giving him/her the right to be present where the Principal Agent takes measurements on site, the result of which would be that there would not be disputes between them on the accuracy of measurements taken on site by the Principal Agent.

The adjustments to the contract value may according to Segal (2018) include, inter alia, the following:

i. Adjustments related to contract instructions (in terms of clause 17);
ii. Changes to provisional sums (in terms of clause 26.3);
iii. Payment for items not included in the priced document (in terms of clause 26.4);
iv. Claims for extension of time and/or expense and loss (in terms of clause 26.7);
v. All adjustments in terms of clause 26.9, refer to 0;

Where the adjustments result from a contract instruction, the determination of the value shall be made in accordance with the provisions laid down in clause 26.2:

"*26.2.1 Work of a similar character executed under similar conditions shall be priced at the rates in the priced document*

26.2.2 Work not of a similar character shall be priced at rates based on those in the priced document and adjusted to suit the changed circumstances

26.2.3 If the above methods do not apply, work shall be priced at rates based on the necessary use of labour; construction equipment and or materials and goods for executing the work plus an allowance of ten per cent (10%) mark—up

26.2.4 Work omitted shall be valued at the rates in the priced document, but where the omission of such work alters the circumstances under which the remaining work is carried out, the value of the remaining work shall be determined by the above methods"

Segal confirms that the Contractor is obligated in terms of clause 17.2 to carry out the instruction, even in a case where the agreement between the Contractor and the Principal Agent relating to the value of such work has yet to be agreed.

If the Principal Agent fails to fulfil its obligation to change such provisional sums, the agreement of the final account will not be able to take place and the Contractor may exercise its rights in terms of clause 26.12 and give its notice of disagreement and follow the procedures as laid out in clause 30 (Dispute resolution).

4.2.2.11 Omit provisional sums and add value of the work executed (Clause 26.3)

A provisional sum (as included in bills of quantities) is defined by Segal (2018) as: "*Provisional sums are given in bills of quantities in respect of work which is normally executed by specialist subcontractors and for which sufficient information is not available at the bill preparation stage. At appropriate times during the execution of the building work, tender documents will be issued for the specialist work incorporated in the provisional sums. Upon receipt of tenders, suitable subcontracts are then nominated or selected and appointed by the principal Contractor in terms of the applicable conditions of the building agreement. The item given for each provisional sum, shall in general terms state the class (nature) of the specialist work and the net amount which is to be provided in respect thereof. Each provisional sum is to be followed by an item where the Contractor may allow for profit if required. An item shall also be given where the Contractor may allow for attendance to be provided to the nominated/selected subcontractor.*"

The work related to such provisional sums is remeasured and agreed with the N/S subcontractor; subsequent to which the provisional sum is updated with the agreed to amount and the profit and attendance adjusted accordingly.

If the Principal Agent fails to fulfil its obligation to change such provisional sums, the agreement of the final account will not be able to take place and the Contractor may exercise its rights in terms of clause 26.12 and give its notice of disagreement and follow the procedures as laid out in clause 30 (Dispute resolution).

4.2.2.12 Make fair assessment of a claim submitted (Clause 26.7)

The requirement for the Principal Agent in terms of clause 26.7 is to assess expense and/or loss claims only, as clause 23.7 deals with the claims submitted for the revision of practical completion.

In terms of this clause 26.7 the Principal Agent is required to make a fair assessment of the claim submitted by the Contractor. On review of the PBA it is evident that there is no express obligation for the Principal Agent to act impartially, however in the case of *Costain v Bechtel [2005] EWHC 1018* the judge ruled that it is in fact the Project Manager's (in the case of the PBA the Principal Agent) duty to act fairly and impartially in matters of assessment and certification; thereby balancing the rights between the Employer and the Contractor. Such assessment will only be done in the instance that the Contractor has in fact complied with its obligation in terms of clause 26.6 to submit its claim within forty (40) working days from the time he/she submitted its notice in terms of clause 26.5, while taking note that such notice is required to be submitted within 20 twenty (20) working days from the time the Contractor became aware, or crucially ought to have become aware of expense and/or loss for which provision was not required in the contract sum; failing which the Contractor forfeits such right to claim.

The three-pronged approach for the Principal Agent to follow in terms of this clause would be to determine the following (developed from (Segal, 2018)):

Step 1: Determine whether the notice was submitted in the time required time frame (in terms of clause 26.5);

Step 2: Determine whether the claim was submitted in the time required time frame (in terms of clause 26.6);

Step 3: Determine whether the claim for expense and/or loss is in fact for expense and/or loss not provided for in the contract sum and which the Contractor has the right to be compensated for.

There is no express right that the Contractor has in terms of the contract if the Principal Agent does not make a fair estimate, however this may lead to a dispute where the Contractor may exercise its rights in terms of clause 30.1 to declare a dispute in order to argue its case to force the Principal Agent to make a fair assessment of the claim submitted.

It is unfortunate that the PBA's risk balance is heavily in favour of the Employer if the Principal Agent fails to act within the period stated in clause 26.7, as the claim submitted is deemed to be refused in such a case in terms of clause 26.8. The Contractor does however can notify this as a disagreement in terms of clause 30.1; but it has to be said that this is not good project management practice from a contractual point of view.

4.2.2.13 Adjust the contract value within 20 days of receipt of a claim submitted (Clause 26.7)

The requirement in terms of this portion of clause 26.7 is straight forward in that the Principal Agent is obliged to adjust the contract value within 20 days of receipt of the claim in the case that the claim is submitted with merit and he/she has in fact approved the same.

If the Principal Agent fails to fulfil its obligation to change such provisional sums, the agreement of the final account will not be able to take place and the Contractor may exercise its rights in terms of clause 26.12 and give its notice of disagreement and follow the procedures as laid out in clause 30 (Dispute resolution).

4.2.2.14 Make adjustments and calculations as listed (Clause 26.9)

In terms of this clause 26.9 the Principal Agent is required to make several adjustments to the contract value, these are required to be made by the Principal Agent without receiving any claims for such items from the Contractor. These adjustments required are listed as follows:

"*26.9.1 Omit prime cost amounts and budgetary allowances [17.1.13] from the contract sum and determine the actual value of such work to be added to the contract value*

26.9.2 Omit provisional sums [17.1.13] from the contract sum and determine the actual value of such subcontractors' work to be added to the contract value

26.9.3 Prorate the Contractor's allowances for profit-and attendance on provisional sums and prime cost amounts excluding any allowance for cost fluctuations

26.9.4 Adjust the preliminaries amounts in accordance with the method selected [CD]

26.9.5 Adjust the contract value to include contract price adjustments (cost fluctuations) if applicable [CD]

26.9.6 Rectify discrepancies, errors in description or quantity, or omission of items in the agreement other than in this JBCC Principal Building Agreement [17.1.1]"

The above adjustments to be made to the contract value are self-explanatory and a detailed analysis of each is beyond the ambit of this report. Segal (2018) states that the above adjustments are in fact required to be made on a progressive preparation of the final account, the result of which is that the Employer will be regularly informed of variations to the contract value; meaning that nasty surprises at the end of the contract will be limited.

If the Principal Agent fails to fulfil its obligation to change such provisional sums, the agreement of the final account will not be able to take place and the Contractor may exercise its rights in terms of clause 26.12 and give its notice of disagreement and follow the procedures as laid out in clause 30 (Dispute resolution).

4.2.2.15 Issue the final account within 60 days of practical completion (Clause 26.10)

It is highly likely that the Principal Agent will use the Quantity Surveyor's information in order to comply with the requirements as stated in this clause 26.10.

In terms of clause 25.3 the Principal Agent is required to issue monthly payment certificates which includes for several detailed calculations (refer to 4.2.2.6), additionally in terms of clause 26.9 the Principal Agent is required to make certain calculations and adjustments, which according to Segal (2018) is required to be done regularly. Accordingly, much of the work in order to prepare the final account will have been done progressively and thus the Principal Agent is thus time-barred to issue the final account to the Contractor within sixty (60) working days of the date for practical completion. Following the receipt of the final account the Contractor is required to provide its feedback within thirty (30) working days.

If the Principal Agent fails to fulfil its obligation to change such provisional sums, the agreement of the final account will not be able to take place and the Contractor may exercise its rights in terms of clause 26.12 and give its notice of disagreement and follow the procedures as laid out in clause 30 (Dispute resolution).

4.2.2.16 Issue final payment certificate within 7 days of acceptance of the final account (Clause 26.13)

Curiously this clause 26.13 is a duplicate of clause 25.15 in the requirement for the Principal Agent to issue the final payment certificate within 7 days of acceptance of the final account. Refer to 4.2.2.8.

4.2.2.17 Issue a recovery statement with each payment certificate (Clause 27.1)

The recovery statement is defined as follows in the PBA: "*The statement prepared and issued in conjunction with each payment certificate by the Principal Agent in terms of the JBCC Recovery Statement format*"

The JBCC Recovery Statement format includes separately for amounts due to Employer and to the Contractor; and can be summarised as follows (items in square brackets [ ] refer to the corresponding clause in the PBA):

"*1.0 Amounts due to the Employer:*

1.1 Paying charges [27.2.1]
1.2 Effecting insurances, Contractor's default [27.2.2]
1.3 Work executed by others, Contractor's default [27.2.3]
1.4 Contractor not paying the amount due [27.2.5]
1.5 Termination of the agreement by the Employer [27.2.6]
1.6 Direct payments to a subcontractor [27.2.7]
1.7 Termination of a subcontract agreement [27.2.8]
1.8 Default by the Contractor [27.2.9]
1.9 Adjustment of subcontractor preliminaries [27.2.10]
1.10 Recoupment from Contractor of advance payment [27.2.4]
1.11 Penalty [27.1.1]
1.12 Default interest [27.1.2]

2.0 Amounts due to the Contractor:

2.1 Default interest [27.1.4]
2.2 Compensatory interest [27.1.5]
2.3 Damages [27.1.6]
2.4 Expense and loss caused by a direct Contractor [27.1.7]
2.5 Advance payment [27.1.8]
2.6 Termination of a subcontract agreement [27.1.9]"

According to Segal (2018) each recovery statement is complemented with substantiating documentation and calculation to show how the amounts are calculated and set out.

Failure by the Principal Agent to furnish such recovery statement may ordinarily also result in the same amounts not being certified for payment (or recovery); which gives the Contractor the right to notify a disagreement in terms of clause 30.1.

4.2.3 Risks during construction

As has been stated before, risks on a construction project is nigh on endless and with every project being unique, the risks presented to each project is unique. In order to determine the risks and the associated management of these risks each project ought to be subjected to thorough risk identification sessions in order to best understand the risks related to the project – this will enable the Project Manager and the parties to the contract to determine the risk allocation and the appropriate management of the risks identified.

As the above falls outside the scope of this research report, it is prudent to determine what the remaining construction related risks are which may be covered under standard form contracts; these risks are limited for the purpose of this report as: Health and Safety, Environment and Quality.

4.2.3.1 Health and safety

The JBCC PBA 6.2 has no express requirement for the Contractor to comply to the Employer's health and safety requirements, instead the only inference to health and safety is likely found in the Contract Data where the law of the country is stated. By implication the Contractor is obliged in South Africa to act in accordance with the requirements set out in the Occupational Health and Safety Act 85 of 1993 and the Construction Regulations 2014.

The Construction Regulations 2014 has a section which indicates that the Contractor is obliged to provide a health and safety plan and that the same is required to be in accordance with the client's health and safety specification. This creates a problem under the JBCC as it does not provide for a scope of work document by reference, nor for the Contractor to comply with the Employer's health and safety requirements. In mentioning that it has to be said that these items are typically covered in the Preliminaries, but it would be far better from a contractual risk management and rights and obligations perspective to identify this clearly in terms of the contract.

4.2.3.2 Environment

The JBCC PBA 6.2 has no express requirement for the Contractor to comply with or promote the environment. This could potentially be added to a separate annexure to the contract in a safety, health and environmental policy for the project; but the PBA itself is silent on the issue.

4.2.3.3 Quality

The JBCC PBA 6.2 has no express requirement for the Contractor to prepare or comply with a typical quality management system. Reference is made to clause 19.0 [Practical Completion] where the Principal Agent under clause 19.1 is required to "*Inspect the works at appropriate intervals to give the contractor interpretations and direction on the standard of work and the state of completion…*"; while the Contractor's responsibility (in order to ultimately achieve practical completion) under clause 19.2 is to "*Inspect the works in advance of the anticipated date for practical completion to confirm that the standard of work required and state of completion…*". From these obligations an inference can be made that the contract does in fact speak to "*standard of work*", however no specific reference to quality is made, nor is the Contractor under any obligation to prepare a quality management system. This is potentially a significant risk to the Employer, as the quality of the workmanship would in such a case have to be defined by the agents (Architect and Engineers) in their drawings and specification documents.

4.3 JBCC PBA 6.2 conclusion

On review of this contract it is evident that there is no flexibility for any other contracting strategy than the traditional adversarial approach. The impression is that this contract is by Quantity Surveyors for the protection for the Quantity Surveying profession in South Africa, with very limited stimulus to effective project management within the contract itself.

The JBCC PBA 6.2 does not provide for any early warning mechanism either from the Employer or the Contractor, as such issues that pose time and cost risk are dealt with in a reactive fashion and are as such not managed pro-actively in terms any requirements set out in the contract.

A criticism on the JBCC PBA 6.2 is that it does not allow for the reduction in the scope of work and related shortening of the contract duration – it is limited to the extension of time by way of Contractor's claims. Additionally, it does not make any provisions for claims of a continuing nature, exposing more risk to the Employer, as the final claim is only to be submitted once the Contractor is able to quantify the delay in terms of the programme.

A criticism against the JBCC is its refusal to acknowledge in the contract the importance of role the programme plays in contract management, as the process around the programme submission by the Contractor is particularly poor and is never required to be accepted by the Principal Agent; the result of which is that the Employer does not have any recourse against the Contractor for failure in this regard.

Although there is no contractual nexus between the Principal Agent and N/S subcontractors there exists and existential causal relationship between them, as the Principal Agents calls for tenders from N/S subcontractors and instructs the Contractor which N/S subcontractor to appoint and in practice really meddles in the affairs of the Contractor in this respect, adding considerable risk to the Employer.

5 BACKGROUND ON AND CRITICAL REVIEW OF THE NEC4 ECC

5.1 Introduction to the NEC

The NEC family of contracts is a wholly integrated and multi-discipline set of contracts (Vosloo & Maritz, 2005) and is now in its 4th edition, and was first conceived in 1986 when the Council for the London Institution for Civil Engineers approved a recommendation made by its Legal Affairs committee to be the leader when it came to alternative contracting strategies, with the objective of identifying needs for good practice (Construction Industry Development Board (CIDB), 2005), with clearer language, better allocation of risk and responsibility, an increase in collaboration and reduced opportunities for claims (Evans, 2017), and application globally (Forward, 2018). The first consultative edition was published in 1991, which was trialed by the likes of the BAA, Yorkshire Water, The Royal Hong Kong Jockey Club and ESKOM (Gerrard, 2005) under the authorship of Dr Martin Barnes and its team (Forward, 2018) and after comments made by the industry and legal practitioners were incorporated, the first edition was published in 1993 (Eggleston, 2006) and (Mason, 2016), at the time a revolutionary contract (Forward, 2018). At the time its characteristics were claimed to be:

i. Clarity and simplicity;
ii. Flexibility; and
iii. Stimulus to good management (Eggleston, 2006), (Evans, 2017) and (Mason, 2016).

It is doubtful that any commentary on the NEC would be complete without taking into consideration the Latham report of 1994 – Constructing the Team, which highlighted 13 conditions which (then) a modern contract should include, these 13 are listed as follows (in verbatim):

i. "*A specific duty for all parties to deal fairly with each other, and with their subcontractors, specialists and suppliers, in an atmosphere of mutual cooperation.*
ii. *Firm duties of teamwork, with shared financial motivation to pursue those objectives. These should involve a general presumption to achieve "win-win" solutions to problems which may arise during the course of the project.*

iii. *A wholly interrelated package of documents which clearly defines the roles and duties of all involved, and which is suitable for all types of project and for any procurement route.*

iv. *Easily comprehensible language and with Guidance Notes attached.*

v. *Separation of the roles of contract administrator, project or lead manager and adjudicator. The Project or lead Manager should be clearly defined as client's representative.*

vi. *A choice of allocation of risks, to be decided as appropriate to each project but then allocated to the party best able to manage, estimate and carry the risk.*

vii. *Taking all reasonable steps to avoid changes to pre-planned works information. But, where variations do occur, they should be priced in advance, with provision for independent adjudication if agreement cannot be reached.*

viii. *Express provision for assessing interim payments by methods other than monthly valuation i.e. mile stones, activity schedules or payment schedules. Such arrangements must also be reflected in the related subcontract documentation. The eventual aim should be to phase out the traditional system of monthly measurement or re-measurement but meanwhile provision should still be made for it.*

ix. *Clearly setting out the period within which interim payments must be made to all participants in the process, failing which they will have an automatic right to compensation, involving payment of interest at a sufficiently heavy rate to deter slow payment.*

x. *Providing for secure trust fund routes of payment.*

xi. *While taking all possible steps to avoid conflict on site, providing for speedy dispute resolution if any conflict arises, by a pre-determined impartial adjudicator/referee/expert.*

xii. *Providing for incentives for exceptional performance.*

xiii. *Making provision where appropriate for advance mobilisation payments (if necessary, bonded) to Contractors and subcontractors, including in respect of offsite prefabricated materials provided by part of the construction team*"
(Latham, 1994)

Evans (2017) highlights that there are some that believe the NEC was based on the Latham report of 1994, however concludes that the NEC contract was first issued in 1993 and at the time already contained 8 of the 13 conditions a modern contract should include, as highlighted the Latham report, with the 2nd edition (NEC2) which was issued in 1995

including for all 13 of the Latham report conditions. The 3rd edition (NEC3) (or suite of documents) was issued in 2005 and revised in 2013, subsequent to use in government and private sectors and with comments from the industry and legal practitioners incorporated.

The Office of Government in the United Kingdom endorsed the NEC3 on its publication in 2005 which lead to mainstream use of the suite of contracts in the UK, to the point where public procurement could no longer be ignorant of the NEC3. Like the CIDB in South Africa, the Government Procurement Board in the UK recommends that public sector organisations use the NEC. Following extensive use of the NEC3 by an ever-expanding base of users and targeted reviews of those users' findings the fourth edition (NEC4) was issued in 2017. According to Forward (2018), the NEC4 ECC (Engineering and Construction Contract) is part of a much bigger suite of documents which aim to provide a suite of documents which Employers can "pick and mix" from depending on the contracting requirements.

The following is an extract from the NEC4 ECC (as italicised) with substantiating or contrasting commentary for each of the statements made by the drafters of the NEC, where applicable:

"*NEC was first published as a new and innovative way of managing construction contracts in 1993 – some 24 years ago. It was designed to facilitate and encourage good management of risks and uncertainties, using clear and simple language.*

The NEC approach to managing contracts was endorsed in "Constructing the team – The Latham Report", which was a government/industry review of procurement and contractual arrangements in the UK construction industry. This led to a second edition in 1995 incorporating the further recommendations of that review. This contract was used increasingly in the UK and overseas, and a major revision was made with the third edition in 2005.

NEC has played a part in helping the industry do things differently and better. It has done so by introducing effective project management procedures into the contract itself. These require pro-active management of risk and change, and the day-to-day use of an up-to-date programme. The range of pricing options has given Clients flexibility in the allocation of risk and the ability to share risk and manage it, collaboratively.

The NEC suite has evolved over three decades, embedding consultation responses and user feedback, and reflecting industry development, including new procurement approaches and management techniques such as alliances, management of information

(BIM) and supply chain engagement. This feedback and the new procurement approaches formed the driver for the development of the next generation contracts and the launch of NEC4.

There were three key objectives in drafting NEC4:

- *provide greater stimulus to good management*
- *support new approaches to procurement which improve contract management and*
- *inspire increased use of NEC in new markets and sectors.*

…NEC has always been known for its innovative approach to contract management, and this revision continues that approach. No other contract suite has had such a transformative effect on the built environment industry as NEC. It has put the collaborative sharing of risk and reward at the heart of modern procurement. It is also unique in providing a complete, back-to back procurement solution for all works, services and supplies in any sector and any country." (Institution of Civil Engineers, 2017)

Forward (2018) and Thomas (2012) support the statement regarding the NEC using clear and simple language, however Egglestone (2006) has some criticism of the use of clear and simple language, indicating that for first time readers the NEC may be more of a mystery than a model of clarity and simplicity, however he/she does state that the guidance notes and the flow charts assist with the understanding and application of the contracts; as well as having misgivings about the legal interpretations of the contract, as those are not so easily solved to the lack of use of legal terminology. Evans (2017) agrees with Egglestone (2006) that the NEC is not as clear and simple as it claims to be, with ambiguity, complexity and confusion being the order of the day as a result of the short sentences and simple phraseology. In UK case law the case of *Anglian Water Services Ltd v Laing O'Rourke Utilities Ltd [2010] EWHC 1529 (TCC) (25 June 2010)* concludes that the NEC's clear and simple approach has a triumph of form over substance. Rowlinson (2011) admits to being "being a fan of this contract" and concludes he/she thinks of it not as a contract, but as a project management procedure manual, as the original NEC (NEC1) was drafted by Project Managers for Project Managers, not by lawyers for lawyers and judges.

Egglestone (2006), Evans (2017), Mason (2016), Rowlinson (2011) and Thomas (2012) support the statement regarding the NEC providing effective project management and a stimulus to good management, with Forward (2018) agreeing with the statement, but adding that the NEC is an all-or-nothing type of contract, requirement full commitment (more so than with other industry standard form contracts) to ensure success, with

Rowlinson (2011) agreeing with this Forward's sentiment and going on to indicate that a cultural transition is required for the philosophy to be successful. Evans (2017) agrees with Forward (2018) that good management is achieved only when the contract is used properly. Mason (2016) contends that the good management statement is best achieved when using Main Option C, with the same option using the target cost mechanism whereby the Contractor is encouraged to meet or improve upon the target cost by offering an entitlement to a share of the saving made. Gerrard (2005) indicates two principles the ECC uses to achieve the NEC's claimed good management:

i. foresight applied collaboratively mitigates problems and shrinks risk, and
ii. clear division of function and responsibility helps accountability and motivates people to play their part.

The above statement regarding collaboration by the parties is supported by Mason (2016) and Rowlinson (2011) as well as by Evans (2017) who indicates that collaboration under the NEC is not optional, with real and effective sanctions put in place to ensure that the Parties work together minimise risk and maximise efficient construction.

5.2 Risks under the NEC4 ECC

5.2.1 Risks due to the obligations of the Employer

The Employer (or Client as the NEC4 ECC now refers to the Employer) is one of the two Parties to the Contract and is so identified in the Contract Data Part One. Rowlinson (2011) indicates that the role of the Employer in the ECC is quite traditional in the sense that he/she hands over its day-to-day project management and contract administration responsibilities to its appointed representatives; namely: the Project Manager and the Supervisor (quality role only).

According to Rowlinson's (2011) summary table and Evans' (2017) list of the Employer's mandatory and discretionary obligations for the NEC3 ECC, Table 12 is an adapted summary of the Employer's express mandatory obligations for the NEC4 ECC:

Table 12 - NEC4 ECC summary of the Employer's mandatory obligations (as adapted from Rowlinson (2011) and Evans (2017))

Clause	Role
10.1	shall act as stated in the contract
10.2	Act in a spirit of mutual trust and cooperation
13.1	communicate in a form which can be read, copied and recorded in the language of the contract
13.7	Communicate notifications required in terms of the contract separately from other communications
25.2	Provides services and other things as stated in the Scope
33.1	Allows access to and use of each part of the Site to the Contractor which is necessary for the work included in the contract
35.1	Takes over the works not later than two weeks after Completion
41.2	Provide materials, facilities and samples for tests and inspections as stated in the Scope
51.1	Makes payment to the Contractor
80.1	Carries the liabilities listed
82.2	Any cost which the Contractor has paid or will pay to Others as a result of an event which the Client is liable is paid by the Client

Clause	Role
83.1	Provides the insurance as stated in the Contract Data
84.2	Ensure that insurance policies include a waiver by the insurers of their subrogation rights against the parties and the directors and other employees of every insured except where there is fraud
84.3	Comply with the terms and conditions of the insurance policies
86.3	pay the Contractor the cost of any insurance taken out by the Contractor where the Contract requires the Employer to take out such insurance but for which the Employer does not submit a required policy or certificate
90.2	make payment of any amount that may be due to the Contractor following the Project Manager's post termination assessment
W1.2 (1)	Appoint the Adjudicator under the NEC Dispute Resolution Service Contract (joint)
W1.2 (3)	if the Adjudicator resigns or is unable to act, jointly choose a new Adjudicator (joint)
W1.3 (3)	include with its referral information to be considered by the Adjudicator
W1.3 (5)	provide any further information to the Adjudicator as instructed within the period stated
W1.3 (5)	comply with any instruction of the Adjudicator
W1.3 (6)	copy any communication to the Adjudicator to the Contractor at the same time
W1.3 (9)	proceed as if the matter disputed was not disputed
W1.4 (1)	do not refer any dispute to the tribunal unless it has first been referred to the Adjudicator
W1.4 (6)	do not call the Adjudicator as a witness in tribunal proceedings
X7.2	repay any overpaid damages with interest if the Completion Date is changed
X14.1	make an advanced payment to the Contractor of the amount stated in the Contract Data

The limited critical review will focus on the mandatory obligations only, where the below table summarises the discretionary obligations, however these will not be reviewed in any further detail, as they may or may not be applicable depending on the situations during the course of the contract.

According to Rowlinson's (2011) summary table and Evans' (2017) list of the Employer's mandatory and discretionary obligations for the NEC3 ECC, Table 13 is an adapted summary of the Employer's express discretionary obligations for the NEC4 ECC:

Table 13 - NEC4 ECC summary of Employer's discretionary obligations (as adapted from Rowlinson (2011) and Evans (2017))

Clause	Role
14.4	replace the Project Manager after he/she has notified the Contractor of the name of the replacement
14.4	replace the Supervisor after he/she has notified the Contractor of the name of the replacement
22.1	use and copy the Contractor's design for any purpose connected with construction, use, alteration, extension or demolition of the works
35.2	use any part of the works before Completion has been certified
44.4	allows access to and use of a part of the works which he/she has taken over if they are needed for correcting a Defect
85.1	insure a risk which the Contract requires the Contractor to insure if the Contractor does not submit a required certificate
90.1	notify the Project Manager if he/she wishes to terminate the Contractor's obligation to Provide the Works
90.2	terminate for a reason stated in the Termination Table
91.1	terminate for one of the insolvency-based reasons (R1–R10)
91.2	terminate if the Project Manager has notified that the Contractor has defaulted in one of the specified ways and not put the default right within four weeks (R11–R13)
91.3	terminate if the Project Manager has notified that the Contractor has defaulted in one of the specified ways and not stopped defaulting within four weeks (R14–R15)
91.5	terminate if the Parties have been released under the law from further performance of the whole of the contract (R17)
91.6	terminate if an instruction to stop or not to start any substantial work or all work has not been countermanded within thirteen weeks under the stated circumstances (R18 and R20)
91.7	terminate if a prevention event (that is in legal terms force majeure) (clause 19) occurs (R21)

Clause	Role
92.1	complete the works and use any Plant and Materials to which he/she has title
92.2 (P2)	instruct the Contractor to leave the Site, remove any Equipment, Plant and Materials from the Site and assign the benefit of any subcontract and other contract related to the performance of the Contract
92.2 (P3)	use any Equipment to which the Contractor has title to complete the works
W1.1 (1)	refer a dispute to the Senior Representatives
W1.2 (3)	if a replacement adjudicator is not chosen jointly ask the Adjudicator nominating body to choose one
W1.3 (1)	notify and refer any issue not agreed by the Senior Representatives to the Project Manager and the other Party for referral to the Adjudicator
W1.3 (3)	include with its referral information to be considered by the Adjudicator
W1.3 (3)	provide any further information to the Adjudicator within four weeks of the referral
W1.3 (3)	extend periods referred to by agreement
W1.4 (2)	notify the Contractor that he/she intends to refer a dispute to the tribunal within 4 weeks of the Adjudicator's decision
W1.4 (3)	notify the Contractor that he/she intends to refer a dispute to the tribunal where the Adjudicator has not notified its decision within the time allowed
W1.4 (3)	do not refer any dispute to the tribunal unless it is less than four weeks since the Adjudicator should have notified its decision

Each of the above identified obligations carry certain risk which is borne by the Employer, as its inaction on any of the mandatory obligations has a consequence – the following is a detailed review of each of the mandatory obligations and each's consequential risks.

Important note:

With the three forms of contract in question having wide-ranging and varying mandatory obligations assigned to the Employer, only the 'main obligations' as covered by Segal

(2018) will be critically analysed in the main body of the report. The balance of the mandatory obligations are covered in the appendices.

5.2.1.1 Act as stated in the contract (Core Clause 10.1)

The obligation contained in Core Clause 10.1 "… *shall act as stated in the contract*" is the primary obligation for the Employer (Client), the Contractor (that is the Parties) as well as the Project Manager and the Supervisor. To this end Rowlinson (2011) contends that by naming all of the key members to the project in the fashion it is stated in this clause, the ECC ensures that all of these personalities (two of whom are companies: that is the Employer and the Contractor; the other two natural persons: that is the Project Manager and the Supervisor) are bound by the same obligations and timelines as required in other clauses. Failure by any of these personalities from this mandatory obligation is therefore a breach of the contract – to this end core clause 10.1, together with core clause 10.2 creates the obligations which are substantial under the ECC and according to Rowlinson (2011) underlie the whole of the ECC.

Thomas (2012) agrees with Rowlinson (2011) that failure by these four parties to act as stated (in terms of Core Clause 10.1) may give rise to the ordinary right to claim for breach of contract, but goes on to indicate these are always subject to the express terms of the contract, which may replace that right. These breaches may have any number of resultant effects, not least being additional cost and/or time, or disputes and termination – all of which are to be dealt with in terms of the remedies contained for such breaches in the contract. According to Egglestone (2006) the majority of the remedies contained in the contract are covered in terms of Clause 6's Compensation Events, with the exceptions for the Employer being damages for delay, termination, recovery of certain costs and withholding of payments due.

What is of interest is that the word 'shall' appears only once in the entire NEC4 ECC, where it states in sub-clause 10.1 that "*the Parties… shall act as stated in the contract*", where according to Egglestone (2006) and Evans (2017) the remainder of the document deals with mandatory obligations by any of the personalities to act in the present tense; that is 'the Contractor notifies' in lieu of 'the Contractor shall notify' or 'notifies' in lieu of 'shall notify'. It would therefore seem on the face of it that the use of 'shall' in the first clause adds an implied 'shall' to all the subsequent clauses and actions required in the contract.

According to Evans (2017) clause 10.1 and the express mandatory obligations shown in Table 12 - NEC4 ECC summary of the Employer's mandatory obligations (as adapted from Rowlinson and Evans) only covers the 'actions' required by the Employer, and seemingly not the prohibitions, that is the requirements for the Employer to not do something, which according to some interpretations may seem somewhat ambiguous.

5.2.1.2 Act in a spirit of mutual trust and co-operation (Core Clause 10.2)

In keeping with the Latham (1994) report: "Constructing the Team", Hughes (2016) considers this sub-clause's inclusion in the contract as a fulfilment of the requirements, that is "*a specific duty for all parties to deal fairly with each other and in an atmosphere of mutual co-operation*" set out by Latham in its recommendation for the most effective forms of contract in construction.

Hughes (2016) contends that the NEC3 ECC the obligations to "…*act as stated in the contract*" and to "*act … in a spirit of mutual trust and co-operation*" was contained in a single sub-clause and single sentence, which in turn had the result that confusion was created as attention was often drawn away from the primary obligation to "…*act as stated in the contract*" and was more focussed on the obligation to "*act… in a spirit of mutual trust and co-operation*" where the contract is silent (Thomas, 2012). This has subsequently been changed in the NEC4 into two separate sub-clauses; that is sub-clause 10.1 and 10.2 to obviate these issues.

Like in the NEC3 ECC, the Evans (2017) contends that obligation in the NEC4 ECC to "*act in a spirit of mutual trust and co-operation*" is considered problematic from a legal point of view. To start off with the obligations in terms of sub-clause 10.1 and 10.2 are separate obligations; that is the obligation to "*act in a spirit of mutual trust and co-operation*" is a separate, distinct and additional obligation to "*act as stated in the contract*". This additional obligation typically only comes into effect when the result of having to act as stated in the contract has more than one possible result, however given the rigorous and strict timelines and process required under this contract, it is an unlikely situation that such situations may occur. Sub-clause 10.2 requires the Parties, the Project Manager and the Supervisor to act in this way, however given all of the strict timelines and processes the Project Manager and the Supervisor is governed by it is hard to imagine how this obligation can practically relate to them, as such situations may fall outside the provisions of the contract, which will have the result of being applicable to the Employer and the Contractor only, as the Project Manager and Supervisor's delegated authority will likely not cover such situations.

The concept of acting in 'good faith' can according to Thomas (2012) and Forward (2018) be likened to "*act in a spirit of mutual trust and co-operation*". The question of what the role of 'good faith' constitutes in contracts is one beyond the scope of this research report (for further reading on this subject reference is made to Elsabé van der Sijde's study in fulfilment of the degree LLM at the Faculty of Law, the University of Pretoria: "The role of good faith in the South African law of contract" (2012)). In summary there are several international and local cases which deal directly with 'good faith' in contracts, with specific reference to deadlock breaking mechanisms ensuring enforceability, these are:

i. *Roazar CC v The Falls Supermarket (232/2017) [2017] ZASCA 166* (29 November 2017) (South Africa);
ii. *Coal Cliff Collieries (Pty) Ltd v Sijehama (Pty) Ltd (1991) 24 NSWLR 1* (Australia);
iii. *Makate v Vodacom Ltd 2016 (4) SA 121 (CC)* (South Africa);
iv. *Southernport Developments (Pty) Ltd v Transnet Ltd 2005 (2) SA 202 (SCA) 210-211* (South Africa) (Van der Sijde, 2012);
v. *Thies Contractors Pty Ltd v Placer (Granny Smith) Pty Ltd 200 16 BCL 255* (Thomas, 2012);
vi. *Aiton Australia Pty Ltd v Transfield Pty Ltd 1999 153 FLR 236* (Thomas, 2012);
vii. *Automasters Australia Pty Ltd v Bruness Pty Ltd 2002 WASC 286* (Thomas, 2012);

According to Thomas (2012) the *Automasters v Bruness* case judge Hashuck, J. found there was a great deal of overlap between the term 'good faith' and: 'unreasonableness' and ' unconscionability', with the following guidance being derived from the case:

"*(1) What is good faith will depend on the circumstances of the case and the context of the whole contract.*

(2) Good faith obligations do not require parties to put aside self-interest; they do not make parties fiduciaries.

(3) Normal responsible business behaviour is permitted but a court will consider whether a party has acted reasonably or unconscionably or capriciously and may have to consider motive.

(4) The duty is to have due regard to the legitimate interests of both the parties in the enjoyment of the fruits of the contract as delineated by its terms." (Thomas, 2012)

Finally, I turn my brief summary of 'good faith' obligations in contracts to Van der Sijde's (2012) findings in her study; that is: "*The case of Southernport Developments (Pty) Ltd v Transnet Ltd is authority for the viewpoint that a duty to negotiate in good faith, where the agreement includes a mechanism to resolve the situation if no agreement can be reached, is enforceable. The question regarding the enforceability of a duty to negotiate in good faith where there is no such mechanism remained unanswered and has been the subject of academic attention ever since*."

According to Hughes (2016) the obligation (and principle) to "*act in a spirit of mutual trust and co-operation*" therefore is really encapsulated by the clauses that follow in the contract; that is in the way those require early warnings, detailed programmes for acceptance, as well as a structured change management process rather than simply a statement requiring the Parties, the Project Manager and the Supervisor to act in such a way. It could therefore be argued that this sub-clause relates partly back to sub-clause 10.1 where the personalities are to "*act as stated in the contract*".

5.2.1.3 Appoint the Project Manager and the Supervisor

In keeping with the suite of documents that the NEC4 is made up of, it stands to reason that the Project Manager should be appointed under the NEC4 Professional Services Contract (Forward, 2018), which in clause 21 binds the Consultant (in this case the Project Manager) to provide its Service in terms of the Scope particular to its contract, with the necessary skill and care normally used by consultants providing similar services (Institution of Civil Engineers, 2017).

Unlike the JBCC PBA 6.2 requires, there is no express obligation contained in the NEC4 ECC by the Employer to appoint either the Project Manager or the Supervisor; however the ECC Contract Data requires the Employer to name the Project Manager and the Supervisor (typically external consultants not on the Employer's staff), with the main difference in the NEC4 ECC being that the person appointed to act as the Project Manager is appointed to manage and administer the contract and not to provide the design; which is different from other standard forms of contract which tend to assign these responsibilities together with the design responsibility to the Project Manager (Hughes, 2016); without these parties having been appointed the contract cannot function.

In the document: Establishing a Procurement and Contract Strategy (Institution of Civil Engineers, 2017) to the NEC4 ECC it is clear that there is an obligation by the Employer to appoint the Project Manager and the Supervisor for a particular contract. Notably, other

than in the JBCC, these are both named individuals, not companies and particularly the Project Manager is appointed long before the procurement process for the appointment of a Contractor for the contract in question is started. To this end it is advisable to have continuity with the Project Manager in that the same person is appointed from the start of the concept phase of the project right through to completion.

Risks to the Employer emanate from what exactly the Project Manager is appointed for in terms of the Scope applicable to its appointment as well as from its actions required in the contract are (the latter being dealt with in detail in 5.2.2 - Risks due to the obligations of the Project Manager) (Institution of Civil Engineers, 2017). Following the appointment of the Project Manager at the outset of the project, he/she would typically advise the Employer on the procurement of design, the appropriate construction contract strategy based on the Employer requirements and the type of project in question, the estimated cost and time duration of the project, as well as the feasibility of the project. With the considerable authority that the NEC places on the Project Manager it is critical for the Employer to assign the Project Manager with the required authority to act on its behalf, as inaction by the Project Manager when waiting for the Employer to respond to decisions required to be made could result in certain rights being assigned to the Contractor, which could result in additional time and cost. Should the Project Manager be limited to act on behalf the Employer, it is of critical importance that he/she includes in its period for response a response from the Employer.

Thomas (2012), Evans (2017) and Forward (2018) all contend that there is no express obligation contained in the NEC4 ECC for the Project Manager to act impartially, however in the case of *Costain v Bechtel [2005] EWHC 1018* the judge ruled that it is in fact the Project Manager's duty to act fairly and impartially in matters of assessment and certification; thereby balancing the rights between the Employer and the Contractor. According to Thomas (2012) the Project Manager is required in terms of sub-clause 10.2 to "*act in a spirit of mutual trust and co-operation*", thereby creating the obligation to act independently and in a fair and unbiased manner.

What is of interest in South African law is that there is no such express requirement for the Project Manager to act fairly and impartially in terms of the Project and Construction Management Profession Act, Act No. 48 of 2000.

5.2.1.4 Provides the Scope

The Scope, which according to Rowlinson (2011) is in practical terms the single most important supporting document to the contract, where Egglestone (2006) goes on to refer to the Scope as "the heart of the NEC…", regardless of which Main Option has been selected. The ECC requires in terms of sub-clause 20.1 the Contractor to provide "*the Works in accordance with the Scope*", which certainly highlights how critical it is for the Employer to provide the same.

The Scope in terms of sub-clause 11.2 (16) is information which:

- "*specifies and describes the works or*
- *States any constraints on how the Contractor Provides the Works and is either:*
- *in the documents which the Contract Data states it is in or*
- *in an instruction given in accordance with the contract*"

According to Thomas (2012) this is a flexible concept with the result being that the Scope will include the detailed drawings and specifications. Mr. Andrew Baird, however differs with this and comments that the Scope will include the same.

Risks related to the Scope are various, with the main result of any issues regarding the Scope being additional time and cost (under Clause 6 – Compensation Events, with specific reference to sub-clauses 60.1(1), 60.1(5), 60.1(16) and 60.4 for related Compensation Events and 63.10, 63.11 for the assessment of the above referenced Compensation Events). According to Rowlinson (2011) a more accurate Scope will result in fewer Compensation Events.

In order to prepare the Scope adequately the NEC include in their user guide: Preparing and Engineering and Construction Contract Volume 2 (Institution of Civil Engineers, 2017) an entire section on how to prepare the Scope, which details the status of the Scope, the drafting of the Scope, the ECC references to the Scope, the Client's Scope and Scope provided by the Contractor for its design. According to the above referenced user guide the Scope should not contain any information which repeats, contradicts or creates and ambiguity with the information provided in the Contract Data or with the ECC itself. Short of doing a complete analysis of what is required in the Scope and how to prepare the same, it is prudent to identify the clauses in the ECC which relate to the Scope, the same is summarised as follows: 11.2 (2), 11.2 (6), 11.2 (9), 11.2 (16), 13.2, 14.3, 15.4, 16.2, 17.2, 20.1, 21.1, 21.2, 22.1, 23.1, 25.1, 25.2, 27.4, 31.2, 31.3, 34.1, 35.2, 40.1, 41.1,

41.2, 42.1, 43.1, 45.1, 46.1, 46.2, 50.2, 56.1, 60.1(1), 60.1(5), 60.1(16), 60.4, 63.4, 63.10, 63.11, 63.12, 71.1, 73.2, 80.1, 91.6, X13.1, X14.2, X16.3. The NEC4 user guide: Preparing and Engineering and Construction Contract Volume 2 (Institution of Civil Engineers, 2017) shows all of the above clauses, the clause description and guidance on what should be included in the scope for each of the clauses, additionally the following example structure is provided in Figure 9:

SECTION	SCOPE (*CLIENT'S*)
S 100	Description of the *works*
S 200	General constraints on how the *Contractor* Provides the Works
S 300	*Contractor's* design
S 400	Completion
S 500	Programme
S 600	Quality management
S 700	Tests and inspections
S 800	Management of the *works*
S 900	Working with the *Client* and Others
S 1000	Services and other things to be provided
S 1100	Health and safety
S 1200	Subcontracting
S 1300	Title
S 1400	Acceptance or procurement procedure (Options C, D, E and F)
S 1500	Accounts and records (Options C, D, E and F)
S 1600	Ultimate holding company guarantee (Option X4)
S 1700	Undertakings to the *Client* or Others (Option X8)
S 1800	Transfer of rights (Option X9)
S 1900	Information modelling (Option X10)
S 2000	Performance bond (Option X13)
S 2100	Advanced payment to the *Contractor* (Option X14)
S 2200	The *Contractor's* design (Option X15)
S 2300	Retention (Option X16)
S 2400	Low performance damages (Option X17)

Figure 9 - Example structure for the NEC4 ECC Scope (Institution of Civil Engineers, 2017)

5.2.1.5 Provides the drawings (design)

Core clause 21.1 requires the client to identify in the Scope which part of the Works the Contractor designs. This design provided by the Employer can be a range of anything between no design at all and all of the design (with the exception of the temporary works,

which the Scope will have to state has to be done by the Contractor), depending on the requirements determined by the client (Forward, 2018). The above design is required to be provided in terms of the Scope and included in the same (refer to 5.2.1.4 Provides the Scope)

5.2.1.6 Provides services and other things as stated in the Scope (Core Clause 25.2)

An important consideration when considering what the services and other things are which are to be provided by the Employer, is that these are all required to be in terms of the Scope, which may either be on the Site, or at a remote location (Eggleston, 2006) and (Evans, 2017). A failure on the Employer's part to provide in terms of the Scope results in terms of clause 60.1(3) in a Compensation Event with a link being drawn to the same being provided on the date required in terms of the Accepted Programme (Eggleston, 2006). According to Thomas (2012) the provision of services could include providing services which may benefit all Contractors on Site. Examples of this may include the provision of accommodation or meals or even temporary access roads.

Evans (2017) and Egglestone (2006) agree that the remedies for the Parties not providing in terms of the Scope are not equal, as when the "*services and other things*" is not provided when due the Contractor has the benefit of a Compensation Event in terms of clause 60.1(3) and the Employer's only benefit is that the cost incurred for the Contractor's failure shall be borne by the Contractor, as assessed by the Project Manager.

The NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) cautions that the "*Providing services and other things*" should not be confused with the Client's use of the works and that the Scope has to indicate what these services and other things are.

5.2.1.7 Allows access to and use of each part of the Site to the Contractor which is necessary for the work included in the contract (Core Clause 33.1)

According to Rowlinson (2011) the NEC departs from many other forms of contract in that it does not provide for the Contractor to take possession of the site, but merely provides for "*…access to and use of each part of the Site…*". This is certainly somewhat different to other standard forms of contract, where like in the JBCC PBA the Contractor gains possession of the site. In *Ibhubhezi Powerlines CC v Udumo Trading 26 (Pty) Ltd and Another (5011/2015, 283/2016) [2016] ZAECGHC 72* Judge Lowe confirms that under the NEC3 (as for the NEC4 as the relevant clause does not change) the Contractor does not have the right of lien over the Site, but only has access to and use of the Site.

The project may or may not be of such a nature that access to the entire Site can be given by the Employer, if not the different access areas and corresponding dates are to be identified in the Contract Data Part One provided by the Client, section 3 (Institution of Civil Engineers, 2017). According to Egglestone (2006) the reason for providing the access date is to ensure that there is no confusion regarding the possible presumption that access to the site is granted from the date when the contract came into existence, and according to Thomas (2012) in terms of clause 30.1 the "*...Contractor does not start...until the first access date...*" no work can be done by the Contractor prior to the access date; however Mr. Andrew Baird comments that work can certainly be done off Site, such as design preparation and the like.

Of importance and noted by Evans (2017), when the Accepted Programme shows a later date for access than the Contract Data, the same will apply, however the Employer will not be bound to give the Contractor access to the site if the Accepted Programme shows an earlier date for access than what the Contract Data shows, as this would be a change to the contract in terms of clause 12.3 and is required to be in writing and signed by the Parties; that is the Project Manager's acceptance of a programme in this specific instance is not of any effect.

A failure by the Employer to provide access is reason for a Compensation Event in terms of clause 60.1(2), as visually depicted in Figure 10, which could result in additional cost to the Employer and delayed Completion.

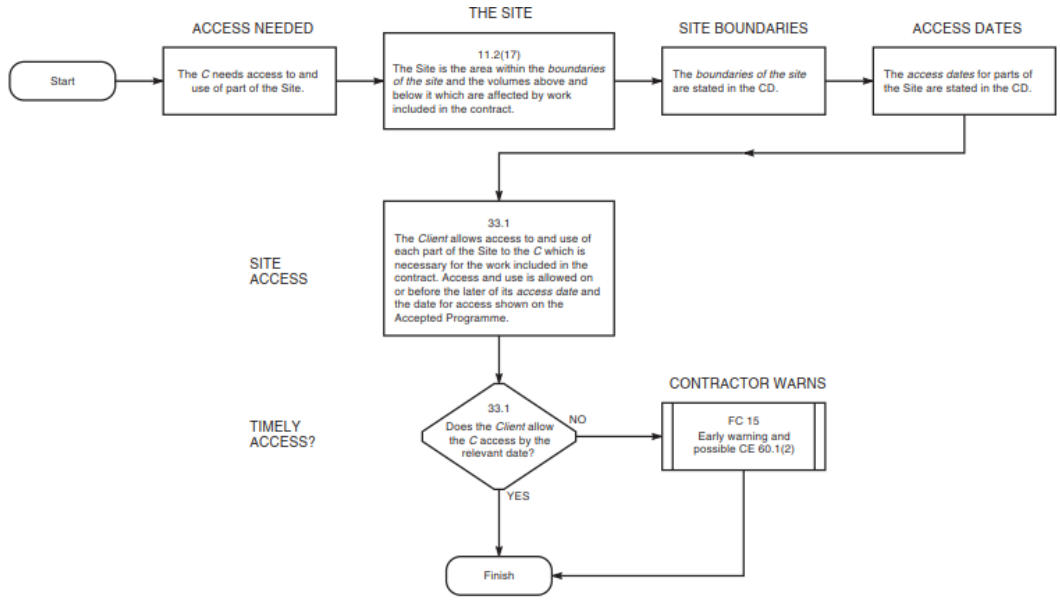


Figure 10 - Flow chart indicating the access to and use of the Site (Institution of Civil Engineers, 2017)

According to clause 11.2(17) “the Site is the area within the *boundaries of the site*”, with the boundaries of the site having to be so described in the document referred to in Contract Data Part One.

5.2.1.8 Makes payment to the Contractor (Core Clause 51.1)

As is stated (in 3.1.1Contract offer, acceptance and agreement), Segal (2018) expresses quite clearly what the parties agree to when entering a construction contract, as well as summarising the rights and obligations of the parties: *“A building contract is an agreement between two parties, one of whom, the building Contractor, agrees to erect a building, and the other the Employer, agrees to pay for it. Personal rights and obligations are created by the agreement, the right of one party being the obligation of the other. The Contractor has the obligation to erect the building and the right be paid for it, while conversely the Employer has the right to have the building erected and pay for it.”*

The core principle emanating from this is that the Employer makes payment for the works the Contractor undertakes.

Payments made are in the currency of the contract and is made in terms of clause 51.2 within three weeks of the assessment date (not of the certification date). Interestingly, according to the NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017), the Contractor is not required to provide an invoice before payment, although this may be changed by agreement between the Parties. Thomas (2012) highlights that in Option B, the assessment by the Project Manager is based on the completed quantity of work in bill items as contained in the Bills of Quantities.

Moving away from the above reference clause only, according to Egglestone (2006), Evans (2017), Rowlinson (2011) and Thomas (2012) the Employer is obliged to make the payment due within three weeks of the assessment date, failing which default interest as stipulated in the Contract Data is due from the latest date which the payment should have been made until the date it is made.

The flow charts depicted in Figure 11 and Figure 12, as contained in the NEC4 flow charts: Engineering and Construction Contract flow chart (Institution of Civil Engineers, 2017) shows the process for payment:

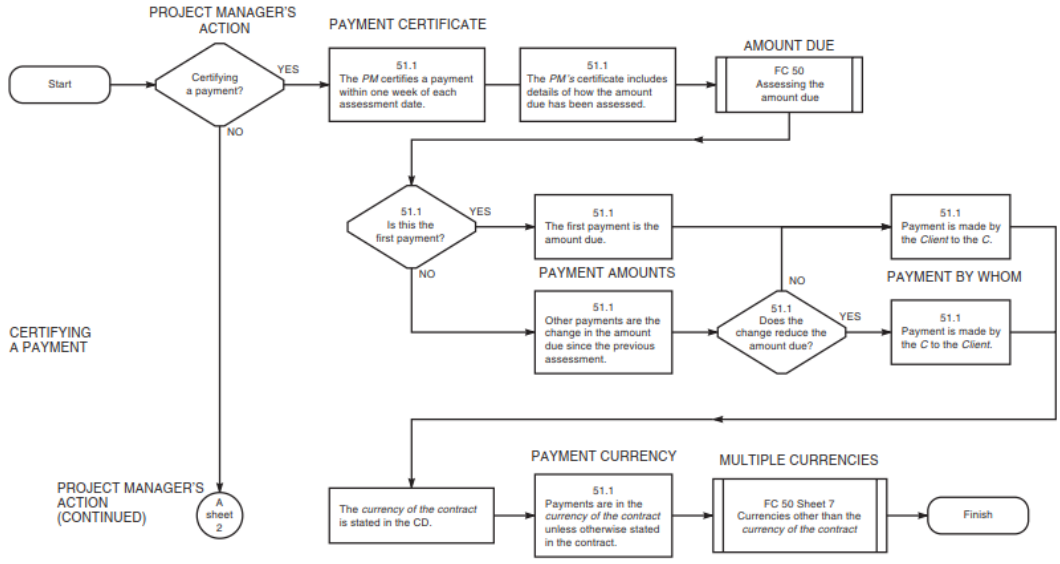


Figure 11 - Flow chart depicting payment process under NEC4 (part 1) (Institution of Civil Engineers, 2017)

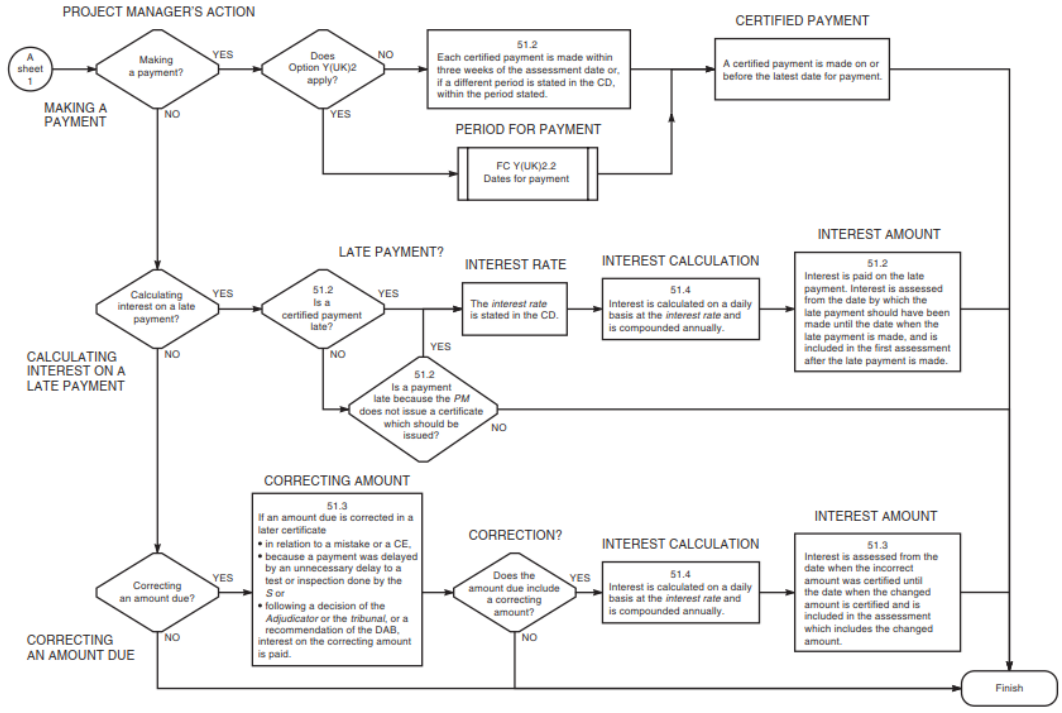


Figure 12 - Flow chart depicting payment process under NEC4 (part 2) (Institution of Civil Engineers, 2017)

5.2.1.9 Make payment of any amount that may be due to the Contractor following the Project Manager's post termination assessment (Core Clause 90.2)

Other than the payment due, subsequent to the Project Manager's post termination assessment, according to Evans (2017), Rowlinson (2011) and Thomas (2012) it is of interest that the Employer may terminate for any reason (subject of course to clause 10.1

and 10.2) (even for convenience according to Evans (2017)), while the Contractor may only terminate for the reasons stated. The amounts due in terms of this clause are in accordance with clause 93 (A1-A4). The risk of inaction on this obligation is a dispute in terms of clause W1.1 ‘any other matter’ on the Dispute Reference Table. Repay any overpaid damages with interest if the Completion Date is changed (Core Clause X7.2)

In terms of the Contract and according to Egglestone (2006), Evans (2017), Rowlinson (2011) and Thomas (2012) damages levied against the Contractor for late completion is paid back with interest at the rate stated in the Contract Data to the Employer when the completion date is changed in a compensation event by the Project Manager or by the adjudicator or tribunal if there was a dispute. In terms of clause 51.4 the interest payable is calculated on a daily basis at the interest rate (in the Contract Data Part One) and is compounded annually, with the calculation in this case being from the date the damages were paid by the Contractor until the repayment date.

5.2.1.10 Make an advanced payment to the Contractor of the amount stated in the Contract Data (Secondary Option Clause X14.1)

In terms of the Contract and according to Egglestone (2006), Evans (2017), Rowlinson (2011) and Thomas (2012) the amount due to the Contractor for the advanced payment is the amount stated in the Contract Data, however there is some uncertainty and ambiguity with regards to whether the amount includes or excludes for VAT, as such the same is required to be stated. What is of interest is that it is not an express requirement for the advanced payment to be paid on the condition precedent that an acceptable advanced payment bond first be submitted in the form as stated in the Scope, it may be so that the advanced payment bond is paid based on the agreement between the Parties – although it has to be said that this is ill advised, as there is much risk in this for the Employer.

The only possible delay to the payment of the advanced payment is the advanced payment bond; if the bond is not required or has been submitted (in the form stated in the Scope) the advanced payment is paid with the first or following assessment, failing which the Contractor has the right to a compensation event.

5.2.2 Risks due to the obligations of the Project Manager

According to Rowlinson’s (2011) summary table and Evans’ (2017) list of mandatory and discretionary obligations for the NEC3 ECC, Table 14 adapted summary of the Project Manager’s express mandatory obligations under the NEC4 ECC:

Table 14 - NEC4 ECC summary of the Project Manager's mandatory obligations (as adapted from Rowlinson (2011) and Evans (2017))

Clause	Role
10.1	Shall act as stated in this contract
10.2	Act in a spirit of mutual trust and cooperation
13.1	Communicate in a form which can be read, copied and recorded
13.3	Reply to a communication within the period for reply or other period stated in the contract
13.4	Reply to a communication submitted or resubmitted to him/her by the Contractor for acceptance
13.4	If a reply is not acceptance, then state its reasons
13.6	Issue its certificates to the Employer and the Contractor
13.7	Communicate notifications separately from other communications
15.1	Give an early warning by notifying the Contractor as soon as he/she becomes aware of any matter which could • increase the total of the Prices, • delay Completion, • delay meeting a Key Date or • impair the performance of the works in use
15.2	Prepares a first Early Warning Register and issues it to the Contractor
15.3	Co-operate at the early warning meeting as required in the contract
15.4	Revises the Early Warning Register to record the decisions made
15.4	Gives an instruction if a decision at an early warning meeting needs a change to the Scope
16.1	Consult with Employer and Contractor about proposal from Contractor for reduced cost
16.2	Accepts (or not accepts) a proposal from the Contractor for reduced cost
16.3	Accepts (or not accepts) a proposal from the Contractor to add an area to the Working Areas
17.1	Notifies the Contractor as soon has he/she becomes aware of an ambiguity or inconsistency in or between the documents which are part of the contract

Clause	Role
17.1	Issues an instruction to resolve an ambiguity or discrepancy
17.2	Gives an instruction to change the Scope on agreement with Contractor's notification that the Scope includes an illegal or impossible requirement.
19.1	Instructs the Contractor how to deal with an event that constitutes Prevention, if such an event occurs
21.2	Accepts (or not accepts) Contractor's design
23.1	Instructs Contractor to submit particulars of design for its Equipment for acceptance
23.1	Accepts (or not accepts) Contractor's design for Equipment
24.1	Accepts (or not accepts) a replacement key person
25.2	Assesses any cost incurred by the Client as a result of the Contractor not providing the services and other things which it is to provide
25.3	Decides whether the work meets Condition stated for a Key Date
25.3	Assesses the additional cost which the Employer has paid or will pay within four weeks of the date when the Condition for the Key Date is met
26.2	Accepts (or not accepts) a proposed Subcontractor
26.3	Accepts (or not accepts) the proposed conditions for a proposed subcontract
27.2	Names others to whom the Contractor provides access to work being done and to Plant and Materials for the contract
30.2	Decides the date for Completion
30.2	Certifies completion within one week of Completion
31.3	Accepts (or not accepts) a programme submitted to him/her
35.3	Certifies the date upon which the Employer takes over any part of the works and its extent within one week of the date
36.3	When accepting a quotation for acceleration change the Prices, Completion Date and Key Dates accordingly and accept the revised programme
40.2	Accepts (or not accepts) the quality policy statement or quality plan

Clause	Role
41.6	Assesses the cost incurred by the Employer in repeating a test or inspection after a Defect is found
44.4	Arranges for the Employer to allow the Contractor access to and use of a part of the works which he/she has taken over if they are needed for correcting a Defect
45.2	Accepts (or not accepts) a quotation in respect of accepting a Defect
46.1	Assesses the cost to the Employer of having an uncorrected Defect corrected by other people (access provided)
46.2	Assesses the cost to the Contractor of correcting an uncorrected Defect (access not provided)
50.1	Assesses the amount due at each assessment interval, and for the first assessment decide the date of the same
50.4	Considers any application for payment the Contractor has submitted on or before the assessment date
50.5	Retains one quarter of the Price for Work Done to Date until the Contractor has submitted a first programme for acceptance
50.6	Corrects any incorrectly assessed amount due in a later payment certificate.
51.1	Certifies a payment within one week of each assessment date
60.6	Corrects mistakes in the Bill of Quantities which are due to the reasons stated
61.1	Notifies the Contractor of a Compensation Event due to an instruction for a change in Scope
61.4	Notifies Contractor whether an event notified by the Contractor is a compensation event
61.4	Instructs the Contractor to submit quotations (if event notified by Contractor is a compensation event)
61.5	Decides whether the Contractor gave an early warning which an experienced Contractor could have given and notify if necessary
61.7	Does not notify a compensation event after the defects date
62.1	Discusses with the Contractor different ways of dealing with a compensation event
62.3	Replies to the submission of a quotation within two weeks

Clause	Role
62.4	Explains the reasons for instructing a revised quotation
62.5	Notifies the Contractor of the agreed extension
63.11	If a change to the Scope makes the description of the Condition for a Key Date incorrect, correct the description
64.1	Assesses a compensation event if one of the four trigger events occur
64.2	Uses its own assessment of the programme if stated conditions occurs
64.3	Notifies the Contractor of its assessment of a compensation event and gives the Contractor details of it within the period allowed for the Contractor's submission of its quotation
73.1	Instructs the Contractor how to deal with an object of value or of historical or other interest found within the Site
84.1	Accepts (or not accepts) the Contractor's insurance certificates
86.1	Submits certificates for insurances provided by the Employer to the Contractor for acceptance before the starting date and afterwards as the Contractor instructs
90.1	Issues a termination certificate promptly if the reason given complies with the contract
90.3	Implement the procedures for termination immediately after issuing a termination certificate
91.2	Notifies that the Contractor has defaulted in one of the specified ways
91.2	Notifies the Employer that the Contractor has not put a specified default previously notified right within four weeks
91.3	Notifies the Employer that the Contractor has defaulted in one of the specified ways
91.3	Notifies the Employer that the Contractor has not stopped defaulting in a previously specified way within four weeks
W1.3(2)	Notifies the Contractor of the extension that has been agreed
W1.3(9)	Proceeds as if the matter disputed was not disputed
X7.3	If the Employer has taken over part of the works, assesses the benefit to the Employer of taking over the part of the works as a proportion of the benefit to the Employer of taking over the whole of the works

Clause	Role
X13.1	Accepts (or not accepts) the bank or insurer which will provide the performance bond
X14.2	Accepts (or not accepts) the bank or insurer which will provide the advance payment bond

The limited critical review will focus on the mandatory obligations only, where the below table summarises the discretionary obligations, however these will not be reviewed in any further detail, as they may or may not be applicable depending on the situations during the contract.

According to Rowlinson's (2011) summary table and Evans' (2017) list of the Project Manager's mandatory and discretionary obligations for the NEC3 ECC, Table 15 is an adapted summary of the Project Manager's express discretionary obligations for the NEC4 ECC:

Table 15 - NEC4 ECC summary of Project Manager's discretionary obligations (as adapted from Rowlinson (2011) and Evans (2017))

Clause	Role
13.5	May extend the period for reply to a communication by agreement and inform the Contractor of the extension which has been agreed
13.8	May withhold acceptance of a submission
14.2	May delegate any of its actions
14.2	May cancel any delegation
14.3	May give an instruction to the Contractor which changes the Scope or a Key Date
23.1	Instruct the Contractor to submit particulars of its design for Equipment for acceptance
24.2	May instruct the Contractor to remove an employee
32.2	Instruct the Contractor to submit a revised programme
34.1	May instruct the Contractor to stop or not to start any work and later instruct him/her to start or re-start it

Clause	Role
36.1	May instruct the Contractor to submit a quotation for an acceleration to achieve Completion before the Completion Date including any changes to the Key Dates to be included in the quotation
45.1	May propose to the Contractor that the Scope should be changed so that a Defect does not have to be corrected
61.6	State assumptions about a compensation event if he/she decides that the effects are too uncertain to be forecast reasonably
62.1	May instruct the Contractor to submit alternative quotations
62.5	Extend the time allowed in relation to the quotation procedure
62.6	Reply to a notification given by the Contractor regarding a failure to reply to a quotation
63.15	Agree to the use of rates and lump sums for the assessment of compensation events
64.4	Reply to a notification given by the Contractor regarding a failure to assess a compensation event
72.1	Allow Equipment to be left in the works
W1.3(2)	Agree to an extension of the time for notifying or referring a dispute before the notice or referral is due

Each of the above identified actions carry certain risk which is borne by the Employer, as its appointed Project Manager's inaction on any of the mandatory obligations has a consequence – the following is a detailed review of each of the mandatory obligations and each's consequential risks.

Important note:

With the three forms of contract in question having wide-ranging and varying mandatory obligations assigned to the Principal Agent / Project Manager / the Engineer, the following comparison is based on those obligations as covered by Palmer (2006) in his comparison of the same obligations.

5.2.2.1 Act as stated in the contract (Core Clause 10.1)

The obligation contained in Core Clause 10.1 "… *shall act as stated in the contract*" is the primary obligation for the Employer, the Contractor (that is the Parties) as well as the Project Manager and the Supervisor. This obligation is discussed in detail in 5.2.1.1 - Act as stated in the contract (Core Clause 10.1).

According to Evans (2017) clause 10.1 and the express mandatory obligations shown in the above table only covers the 'actions' required by the Project Manager, and seemingly not the prohibitions, that is the requirements for the Project Manager to not do something, which according to some interpretations may seem somewhat ambiguous.

The above places a significant obligation on the Project Manager, as its actions or inactions may result in a breach of the contract, which could ultimately place the Employer at risk for negative financial or time implications or even dispute. Careful understanding of the Project Manager's delegated authority to decide on behalf of the Employer is important, as the Project Manager will have to reckon this into its time if he/she needs to respond to Compensation Events (as an example) and still has to obtain Employer approval (establishing a procurement and contract strategy) (Institution of Civil Engineers, 2017) within the timeframe allowed for in terms of the contract.

5.2.2.2 Act in a spirit of mutual trust and cooperation (Core Clause 10.2)

Refer to 5.2.1.2 - Act in a spirit of mutual trust and co-operation (Core Clause 10.2) for a detailed analysis of this obligation, this is owing to the fact that in accordance with the contract the principle applies to the Project Manager as much as it does for the Employer.

5.2.2.3 Communicate in a form which can be read, copied and recorded (Core Clause 13.1)

Refer to 12.7.1.1 - Communicate in a form which can be read, copied and recorded in the language of the contract (Core Clause 13.1) for a detailed analysis of this obligation, this is owing to the fact that in accordance with the contract the principle applies to the Project Manager as much as it does for the Employer.

5.2.2.4 Reply to a communication within the period for reply or other period stated in the contract (Core Clause 13.3)

In terms of the Contract and according to Egglestone (2006), Evans (2017), Rowlinson (2011) and Thomas (2012) the reply to a communication is within the period for reply as stated in the Contract Data, or any other period based on specific items listed in the

Contract Data. The NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) gives the example of the design being such an item which may require a longer period for reply.

Evans (2017) and Rowlinson (2011) highlights that the clause contains two exceptions to the obligation:

i. It's only applicable to communications which are required in terms of the contract;
ii. It's not applicable if otherwise stated in the contract.

Rowlinson (2011) contends that this is a powerful clause for Employers to ensure that their external Project Managers comply with the contract, as a non-conformance to the timescale may result according to Evans (2017) in a compensation event in terms of clause 60.1(6).

In terms of clause 13.5 the Project Manager may extend the period for reply before the reply is due, if so agreed with the Contractor; accordingly the Supervisor has no authority to extend the period for reply.

5.2.2.5 Issues its certificates to the Employer and the Contractor (Core Clause 13.6)

In terms of the Contract and according to Egglestone (2006), Evans (2017), Rowlinson (2011) and Thomas (2012) the Project Manager is required to the Employer and the Contractor.

According to Thomas (2012) certificates are issued by the Project Manager in respect of the following:

i. Clause 30.2 – date of Completion;
ii. Clause 35.3 – date upon which the Client takes over any part of the works;
iii. Clause 51.1 – payment;
iv. Clause 90.1 – termination;
v. Clause 90.4 – final payment following termination.

Failure by the Project Manager to issue the certificates required may give rise to a compensation event in terms of clause 60.1(18) – breach of contract by an agent of the Employer.

5.2.2.6 Accepts (or not accepts) Contractor's design (Core Clause 21.2)

The Contractor is required in terms of clause 21.2 to submit the particulars of its design to the Project Manager in accordance with the requirements set out in the Scope – the result of this is that if the Scope does not state the particular requirements for design submission Egglestone (2006), Evans (2017), Rowlinson (2011) and Thomas (2012) all agree that the Contractor does not submit its design and proceeds with the Works without requiring acceptance from the Project Manager.

The consequences of non-compliance by the Project Manager are twofold:

i. A compensation event in terms of clause 60.1(6) – response by the Project Manager to a communication within the period required by the contract;
ii. A compensation event in terms of clause 60.1(9) if the Project Manager rejects the design for any other reason than those permitted in clause 21.2 (does not comply with the Scope, does not comply with the Law).

5.2.2.7 Instructs Contractor to submit particulars of design for its Equipment for acceptance (Core Clause 23.1)

In terms of clause 21.2 the Contractor is required to submit the details of its design set out in the Scope, whereas this clause 23.1 requires the Contractor to submit the particulars of design for its Equipment (with Equipment being defined in clause 11.2(9)) for acceptance, but only if instructed to do so by the Project Manager.

In accordance with clause 13.3 the Contractor is required to submit the above required design within the period for reply stated in the Contract Data.

The consequence of non-compliance by the Project Manager is that the Contractor will proceed with the design, procurement and installation of the Equipment without any input from the Project Manager – to this end the Project Manager may face a compensation event on its professional services appointment from the Employer if it so required that he/she obtain designs for the Equipment for its approval.

5.2.2.8 Accepts (or not accepts) Contractor's design for Equipment (Core Clause 23.1).

If the Project Manager is late with his acceptance (or non-acceptance) this could lead to:

i. A compensation event in terms of clause 60.1(6) – response by the Project Manager to a communication within the period required by the contract;

ii. A compensation event in terms of clause 60.1(9) may also arise if the Project Manager rejects the design for any other reason than those permitted in clause 23.1 (does not comply with the Scope, the Contractor's design which the Project Manager has accepted does not comply with the law).

5.2.2.9 Decides the date for Completion (Core Clause 30.2)

In accordance with clause 11.2(3) the "Completion Date is the *completion date* unless later changed in accordance with the contract". The italicized *completion date* means the date which is so stated in the Contract Data, whereas the Completion Date is the same date, unless and until changed by the Project Manager on the approval of a compensation event.

Rowlinson (2011) contends that the certification of completion is a matter where the Project Manager has to be particularly aware of what is going on in the contract, as there is no obligation on the Contractor to notify the Project Manager that it is about to achieve completion, or that it invites the Project Manager to inspect the works for completion; accordingly this is a matter where the ethos of acting in a spirit of trust and mutual cooperation is particularly relevant, as the Project Manager may want the Contractor's (non-binding, nor obligatory) advice as to when he/she thinks the works will be in a state for inspection for completion.

The NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) indicates that Completion is one of the most important points in a project, where in the case of the NEC4 ECC (and the main as well as secondary option clauses applicable to this research report) the following occur on Completion of the whole of the works:

i. Early warnings in terms of the second bullet of clause 15.1 are no longer relevant;
ii. The regular early warning meetings under clause 15.2 is no longer relevant;
iii. The second bullet of clause 19.1 (prevention) is no longer relevant;
iv. The regular submission of revised programmes in terms of clause 32.2 ceases;
v. The Employer takes over the works within two weeks of Completion, unless Completion is before the Completion Date and the Employer has stated that take over is not to be done early (see clause 35.1);
vi. The bonus for early Completion can be calculated (secondary option clause X6 refers);
vii. Delay damages can be calculated (secondary option clause X7 refers);

viii. The defects date is now known;

ix. One half of the retention is released (secondary option clause X16 refers).

5.2.2.10 Certifies completion within one week of Completion (Core Clause 30.2)

According to Thomas (2012) clause 30.2 is to be read with clause 13.1: "*communicate in a form that can be read, copied and recorded…*", as well as clause 13.6: "…*Project Manager issues certificates to the Client and the Contractor…*", with the obligation on this clause 30.2 being that the Project Manager issues the certificate within one week of Completion occurring.

Failure on the part of the Project Manager to certify completion within one week of the same occurring may according to Evans (2017) and Thomas (2012) give rise to a compensation event in terms of clause 60.1(18): "*A breach of contract by the Client which is not one of the other compensation events in the contract.*"; however the likelihood is also there that the Contractor may refer the matter as a dispute to the Senior Representatives in terms of clause W1.1 to resolve. Under the Dispute Reference Table the dispute will be about: "*An action or inaction of the Project Manager or the Supervisor*", with the Contractor being obliged to refer the matter to the Senior Representatives within four weeks after he/she becomes aware of the action or inaction of the Project Manager – failure in this regard results in the Contractor losing its right to dispute the matter in terms of the earliest completion date.

5.2.2.11 Assesses the amount due at each assessment interval, and for the first assessment decide the date of the same (Core Clause 50.1)

There are two obligations on the Project Manager contained in clause 50.1:

i. Firstly, that of determining the first assessment date after the starting date which is not any later than the assessment interval (the assessment interval is stated in the Contract Data part 1, item 5) after the starting date and which suits the procedures of the Parties. Later assessments by the Project Manager are carried out on at the end of each assessment interval; and

ii. Secondly the determination of the amount due.

Rowlinson (2011) argues that it is typical for the assessment interval to be monthly which will result in 12 payments per annum and highlights the risk of stating 'four weeks' in the Contract Data, which will result in 13 payments per annum.

In accordance with the NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) the Option B (as used for this research report) payment mechanism at each assessment date is that of Price of Work Done to Date (PWDD), which is determined by the Project Manager or its duly delegated Quantity Surveyor (as delegated in terms of clause 14.2) by using the BoQ's (as defined in 11.2(22)) rates and lump sums against the total quantity of work completed for each item or lump sum, all in accordance with clause 11.2(30). According to Evans (2017) the Project Manager does not need any application for payment from the Contractor, however in accordance with clause 50.4 should the Contractor submit such an application, the Project Manager is obliged to consider the same before making its assessment of the amount due before the assessment date.

There is a very real obligation on the Project Manager to make its assessment correctly, as clause 50.6 requires the Project Manager to correct any wrongly assessed amount in a later payment certificate – this may seem simple enough and not without any particular remedy for the Contractor, however clause 51.3 requires that interest be paid on any amount incorrectly assessed if it arouse from a mistake by the Project Manager.

Figure 13, as contained in the NEC4 flow charts: Engineering and Construction Contract flow chart (Institution of Civil Engineers, 2017) shows the assessment of the amount due with respect to the Project Manager's obligation in clause 50.1:

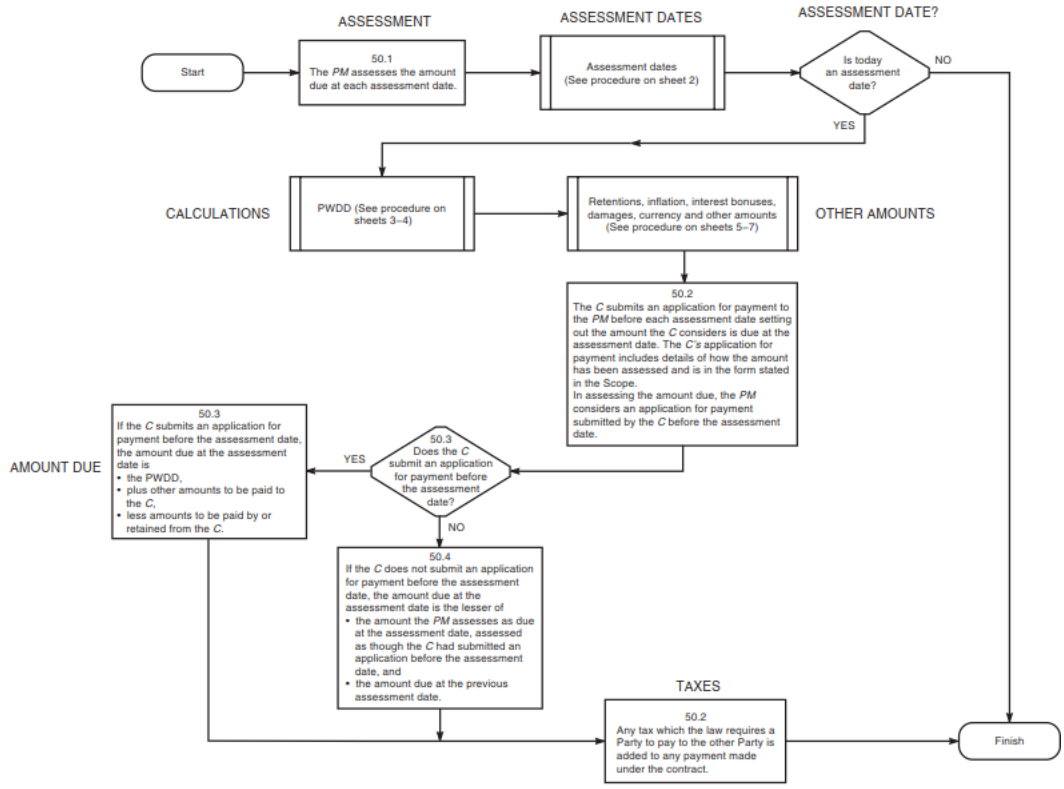


Figure 13 - Assessment of the amount due with respect to the Project Manager's obligation in clause 50.1 (Institution of Civil Engineers, 2017)

The risk to the Employer for the Project Manager not meeting its obligation in determining the first assessment date and amount due as well as subsequent amounts due is that the Contractor has the right to terminate in terms of clause 90.1 and 91.4: "*The Contractor may terminate if the Client has not paid an amount due under the contract within thirteen weeks of the date that the Contractor should have been paid (R16)*".

5.2.2.12 Certifies a payment within one week of each assessment date (Core Clause 51.1)

In terms of clause 51.1 the Project Manager is required to certify payment within one week of each assessment date and secondly to show the basis of calculation of the assessment of the amount due. Evans (2017) argues that if both of these requirements are not met then the certificate is not valid as a payment notice. This amount due is either an amount due to the Contractor or to the Employer in the event of a negative interim assessment.

The wording of the clause is somewhat confusing, but the gist of it is that the first certificate is for the total amount due at that time and the subsequent certificates are the nett amount due for the period between the current and previous certificates.

According to Thomas (2012) there may be instances where the Project Manager will issue certificates that are not bound by the timing of the assessment date; with these being the correction in terms of clause 51.3 and certification following the decision of the Senior Representatives or the Adjudicator.

The risk to the Employer for the Project Manager not meeting its obligation in determining the first assessment date and amount due as well as subsequent amounts due is that the Contractor has the right to refer the matter as a dispute to the Senior Representatives and in terms of clause 90.1 and 91.4: "*The Contractor may terminate if the Client has not paid an amount due under the contract within thirteen weeks of the date that the Contractor should have been paid (R16)*".

5.2.2.13 Assesses a compensation event if one of the four trigger events occurs (Core Clause 64.1)

The reasons for the Project Manager being obliged to make its own assessment of any compensation event follows some failure by the Contractor according to Rowlinson (2011) and the NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017). Clause 64.1 lists the four reasons which oblige the Project Manager to make its own assessment of the compensation event.

The first reason contains two elements, that being firstly that the Contractor has not submitted its quotation and details of the assessment and secondly that the Contractor has not submitted the quotation within the time allowed for the quotation.

The second reason is that if the Project Manager decides that the Contractor has not assessed the compensation event correctly, this gives the Project Manager significant power in that it could be for any reason as determined by the Project Manager; in which case the Project Manager does however also have the option of requiring the Contractor to submit a corrected quotation in terms of clause 62.3.

The third reason relates to the requirements of the non-submission of the programme by the Contractor as contained in clause 32 and alterations to the programme required in terms of clause 62.2.

The fourth reason relates to the non-acceptance of the Contractor's latest programme for one of the reasons stated in clause 31.2.

According to Rowlinson (2011) the wording of this clause 64.1 is of such a nature that if one of the listed failures by the Contractor has occurred the Project Manager has no other

option and that its obligation is so clear that if he/she fails in its obligation to carry out its assessment, there will be a breach for which the Employer will be liable for interest in terms of clause 51.3: "*…interest on the correcting amount is paid. Interest is assessed from the date when the incorrect amount was certified until the date when the changed amount is certified and is included in the assessment which includes the changed amount*".

Figure 14, as contained in the NEC4 flow charts: Engineering and Construction Contract flow chart (Institution of Civil Engineers, 2017) shows the Project Manager's assessment with respect to the its obligation in terms of clause 64.1:

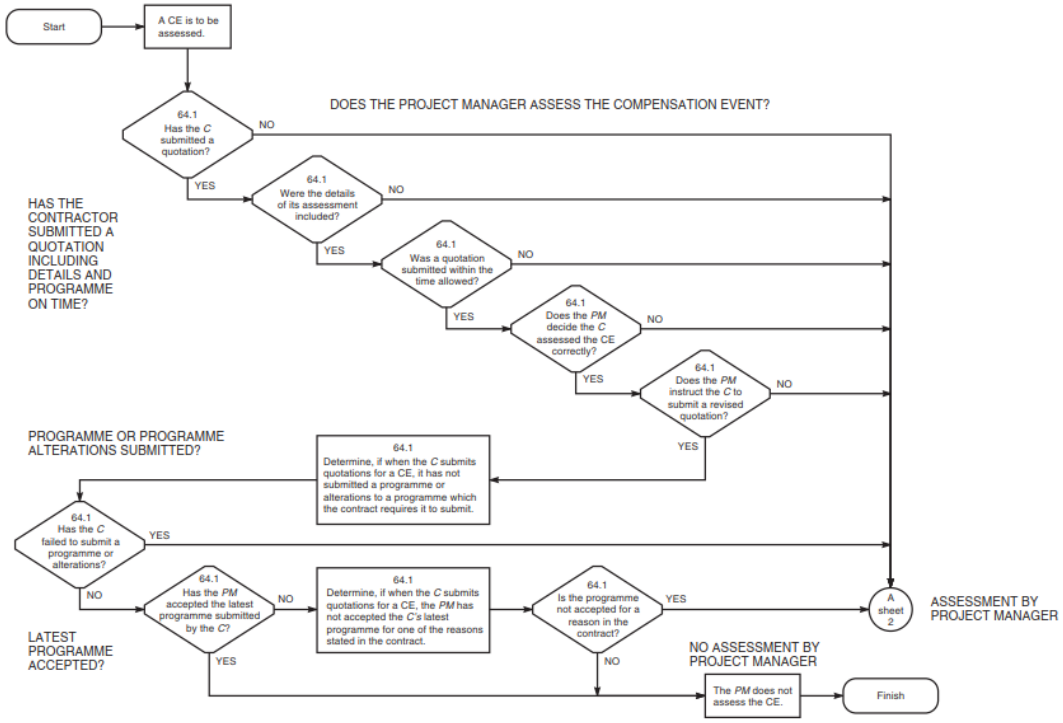


Figure 14 - Project Manager's assessment in terms of clause 64.1 (NEC4) (Institution of Civil Engineers, 2017)

5.2.2.14 Uses its own assessment of the programme if stated conditions occurs (Core Clause 64.2)

When assessing the compensation event, the Project Manager is required to do so in terms of clause 63, of course always acting fairly and impartially.

The reasons for the Project Manager to make its own assessment of the Programme are those stated in said clause 64.2: "*there is no Accepted Programme; the Contractor has not submitted a programme or alterations to a programme for acceptance as required by the contract; or the Project Manager has not accepted the Contractor's latest programme*

for one of the reasons stated in the contract." The first two reasons in this clause 64.2 match those third and fourth reasons contained in clause 64.1, which in turn provides the Project Manager with the ability to overcome the problems which the Contractor's failure may bring about. According to Rowlinson (2011) this places quite a heavy burden on the Project Manager as he/she is required to prepare its own up-to-date programme, without placing any right to the Employer to recover such cost as may be incurred by the Project Manager from the Contractor.

Should the Project Manager fail in its obligation to assess the Programme him/herself the remedy for the Contractor will be in terms of clause 64.4: "*If the Project Manager does not assess a compensation event… the Contractor may notify the Project Manager of that failure… the failure continues for a further two weeks after the Contractor's notification it is treated as acceptance by the Project Manager of the quotation*".

Figure 15, as contained in the NEC4 flow charts: Engineering and Construction Contract flow chart (Institution of Civil Engineers, 2017) shows the Project Manager's assessment with respect to its obligation in terms of clause 64.2:

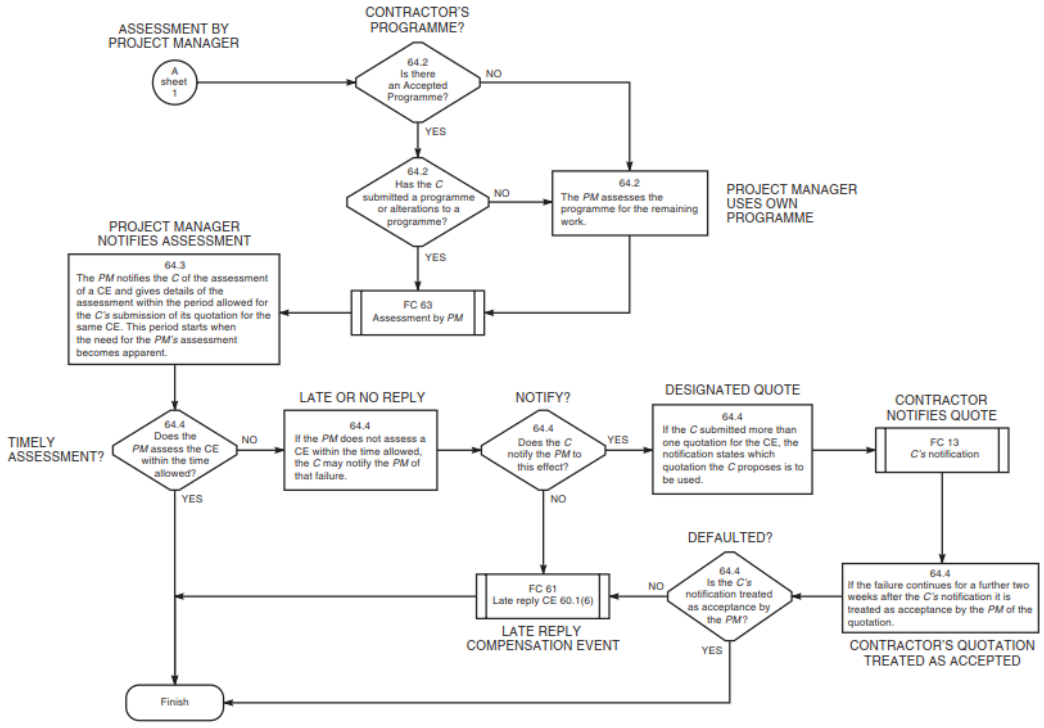


Figure 15 - Project Manager's assessment in terms of clause 64.2 (NEC4) (Institution of Civil Engineers, 2017)

5.2.2.15 Notifies the Contractor of its assessment of a compensation event and gives the Contractor details of it within the period allowed for the Contractor's submission of its quotation (Core Clause 64.3)

In terms of clause 64.3 the time period for the Project Manager commences when its need for assessment becomes apparent. According to Thomas (2012) this is likely to be the date at which the Project Manager notifies the Contractor that he/she will be making its own assessment.

Should the Project Manager fail in its obligation to assess the Programme him/herself the remedy for the Contractor will be in terms of clause 64.4: "*If the Project Manager does not assess a compensation event… the Contractor may notify the Project Manager of that failure… the failure continues for a further two weeks after the Contractor's notification it is treated as acceptance by the Project Manager of the quotation*".

5.2.3 Risks during construction

As has been stated in 4.2.3 - Risks during construction, the remaining construction related risks are limited for the purpose of this report as: Health and Safety, Environment and Quality.

5.2.3.1 Health and Safety

In accordance with clause 27.4: "*The Contractor acts in accordance with the health and safety requirements stated in the Scope*", which immediately begs the question: 'what about the obligation in South Africa to act in accordance with the Occupational Health and Safety Act 85 of 1993?'. According to Evans (2017) the Contractor is not only obliged to act in accordance with the requirement stated in clause 27.4, but that it is implied that the Contractor is required to act in accordance with statutory health and safety requirements. He does however also go on to state that, although superfluous, the Contractor has the obligation to Provide the Works in terms of clause 11.2(15), meaning "*…to do the work necessary to complete the works in accordance with the contract and all incidental work, services and actions which the contract requires.*", with the result being that it may not be quite that necessary to have stated that the "*Contractor acts in accordance with the health and safety requirements…*" in a separate clause, owing to the wording of the clause 11.2(15).

Rowlinson (2011) provides excellent clarity in this seemingly unnecessary requirement in the NEC4 ECC by indicating that the Scope does not state any requirements which the legislation already requires, instead the Scope states any requirements above and beyond

legislation and provides for the appropriate procedures which are applicable, this is echoed in the NEC4 user guide: Preparing and Engineering and Construction Contract Volume 2 (Institution of Civil Engineers, 2017) which states: "*State any health and safety requirements that are in additional to the requirements of law, which the Contractor must follow.*". In the User Guide the following headings are identified to be included in the Scope under the health and safety heading:

i. "*Client's safety requirements;*
ii. *Reporting requirements;*
iii. *Safety management, supervision and qualifications;*
iv. *Management of Subcontractors;*
v. *Drug and alcohol policy;*
vi. *Site induction procedures."*

The above list of headings is above and beyond what is required in terms of legislation and provides clarity as to what is required in terms of the Scope for the Contractor's compliance and pricing.

The Occupational Health and Safety Act 85 of 1993 Construction Regulations, 2014 certainly seem on the face value of it to be agreeable with the NEC in that it requires the Employer by law in section 5 (1)(b) to: "*prepare a suitable, sufficiently documented and coherent site specific health and safety specification for the intended construction work based on the baseline risk assessment…*" and in 5 (1)(f) "*include the health and safety specification in the tender documents*" and in 5 (1)(g) "*ensure that potential principal Contractors submitting tenders have made adequate provision for the cost of health and safety measures*". Conversely the Contractor is obliged in terms of section 7 (1)(a) to "*provide and demonstrate to the client a suitable, sufficiently documented and coherent site specific health and safety plan, based on the client's documented health and safety specifications contemplated in regulation 5(1)(b), which plan must be applied from the date of commencement of and for the duration of the construction work…*". Accordingly, the seemingly unnecessary obligation in terms of clause 27.4 is no longer a superfluous and unnecessary obligation when one considers the specific laws which the work is required to be provided under.

Of further interest is that in terms of clause 31.2 the Contractor is obliged to make time risk allowances in its programmes he/she submits for acceptance for "*health and safety requirements*". Failing this the Project Manager has a reason to not accept the Contractor's programme.

Should the Contractor substantially fail to comply with its obligations in terms of the Occupational Health and Safety Act 85 of 1993 and by implication the Construction Regulations 2014 or the health and safety requirements in the Scope, the Employer has a reason to terminate the Contractor's obligation to provide the service in terms of clause 91.3 (R15).

5.2.3.2 Environment

The NEC4 ECC itself does not state expressly that the Contractor has any such environmental protection obligation or that the Employer has any additional requirements in this respect. The NEC4 user guide: Preparing and Engineering and Construction Contract Volume 2 (Institution of Civil Engineers, 2017) includes under their section S200: "*General constraints on how the Contractor Provides the Works*" that the Employer is to provide in the Scope for any restrictions among other things "*Pollution, ecological or environmental impacts."*, this brings it back to the Contractor having to provide the works in terms of the contract in terms of clause 11.2(15) and additionally the Scope in terms of clause 11.2(16) "*states any constraints on how the Contractor Provides the Works*". Hughes (2016) echoes this and states that the site information may include for "*Environmental issues, for example nesting birds and protected species*".

From the above it is evident that although the contract does not have any express requirement for the Contractor on environmental considerations, the fact that the Keating recommendations has been followed rigorously in the NEC is evident in this case, as the guidance notes by way of the User Guide provide clarity on the matters related to environmental considerations and ultimately ensures that if the Employer provides a properly detailed Scope the Contractor will not have any doubts as to what its obligations are in this respect.

Should the Contractor substantially fail to comply with its obligations in terms of the Scope, the Employer has a reason to terminate the Contractor's obligation to provide the service in terms of clause 91.3 (R15).

5.2.3.3 Quality

There lies risk to the Employer that the end product he/she envisioned may not be delivered at the quality expected, especially if the specifications are onerous; however in saying that the Employer has remedies in terms of the NEC4 ECC whereby the Contractor is has the responsibility of Quality as part of its duty to Provide the Works in terms of clause 20.1, with the same being defined in clause 11.2(15). Accordingly, the

Scope is required to specify what the Employer's quality requirements and standards are, with those standards stated in the Scope being the baseline against which Defects (refer to clause 11.2(6)) are measured by the Supervisor.

To this end the Contractor is required to run a Quality Management System in terms clause 40.1 and those requirements stated in the Scope (if required by the Employer). Refer to 12.7.2.26 - Accepts (or not accepts) the quality policy statement or quality plan (Core Clause 40.2) for further reading on the acceptance of the quality policy statement or quality plan by the Project Manager.

In terms of clauses 43 and 44 the Supervisor and the Contractor work together to determine Defects until the defects date, with the Contractor being required to correct the defects prior to the correction defect period in terms of clause 44.2. Only at the end of the defects correction period or alternatively all the defects have been corrected does the Supervisor issue the Defects Certificate in terms of clause 44.3. Refer to 12.7.2.28 - Arranges for the Employer to allow the Contractor access to and use of a part of the works which he/she has taken over if they are needed for correcting a Defect (Core Clause 44.4).

In terms of clause 45 there is a remedy for the Employer to accept certain defects, with the provision that the Scope is required to be changed to reflect the same. For the correction of uncorrected defects refer to 12.7.2.29, 12.7.2.30 and 12.7.2.31. Refer to Figure 42 - Flow chart for correcting defects (NEC4) .

In terms of clause 91.2 the Employer may terminate the Contract based on reason R11 "*Substantially failed to comply with its obligations*", as such if the Contractor has been notified of this default and not corrected the default within 4 weeks of the notification, the Employer may terminate the contract. As such there is a very serious obligation on the Contractor to provide the works as is required in terms of the contract, which by extension means that the Quality of the works is to the standard specified; if not the Employer has every right to terminate, of course always subject to the contract.

5.3 NEC4 ECC conclusion

On review of this form of contract I agree with certain literature that this form of contract is by Project Managers for Project Managers and that the approach to construction contracting in the NEC suite of contracts is as flexible as can be.

A point highlighted numerous times during a 2-day course on the NEC4 ECC by Mr. Mile Sofijanic was that any contract is only as good as the people that manage it, regardless of the intentions of the contract in itself; that being said the core principles of the NEC4 are sound and seem on the balance of things to be as claimed by the authors, which is that the contract provides:

i. Flexibility – this is achieved through a plethora of different contract strategies (as well as other supporting contracts for professional services, supply, short forms of contract, subcontracts, etc.);
ii. A stimulus to good management – this is achieved through an excellent early warning system, compensation events and strict timelines to be adhered to;
iii. Clarity and simplicity – clarity may very well be achieved, but as stated could cause some legal confusion owing to the use of plain English and present tense language; and the fact that a plethora of simple things make for some complexity – just think of the 74 no. off express mandatory obligations and 19 no. off express discretionary obligations assigned to the Project Manager as an example – each of these obligations may be clear and simple in itself, but the sheer number of them make for an administrative burden which needs to be carefully managed with regards to actions required and timelines abided to by the Project Manager to ensure that the consequential clauses for its actions do not become a reality – the same which could end up costing the Employer time and money (both in direct expense on the contract and possible loss of income due to later completion).

A criticism against the NEC is the confusion use of italics and capital letters to differentiate between defined terms and those terms which are so described in the Contract Data.

6 BACKGROUND ON AND CRITICAL REVIEW OF THE FIDIC RED BOOK 2017

6.1 Introduction to the FIDIC

The Fédération Internationale des Ingénieurs-Conseils (FIDIC) was founded in 1913 by three member countries (Belgium, France and Switzerland (FIDIC, 2013)) and is today represented in 86 countries.

The first edition of the *Conditions of Contract (International) for Works of Civil Engineering Construction* (the so called "Red Book") was published in 1957 and was appropriate for civil engineering works (based on the premise that a detailed design is provided by the Employer or its Engineer to the Contractor), the same had three subsequent revisions, being the 1969 2nd edition, the 1977 3rd edition and the 1987 4th edition. This so called 'Red Book' was best suited for infrastructure and civil engineering projects such as bridges, roads, tunnels, dams, and water and sewage facilities.

The first edition of the *Conditions of Contract for Electrical and Mechanical Works including Erection on Site* (the so called "Yellow Book") was first published in 1963 owing to increasing pressure on civil engineering projects (using the "Red Book" as contract) with major plant and related items being manufactured off site and was appropriate for electrical and mechanical works with an emphasis on testing and commissioning and more suitable for the manufacture and installation of plant. The 'Yellow Book' had two subsequent revisions being the 1980 2nd edition and 1987 3rd edition.

The first edition of the *The Conditions of Contract for Design-Build and Turnkey* (the so called "Orange Book") was published 1995 owing to increasing popularity of projects procured under a design and build / turnkey contract strategy (Glover & Hughes, 2011), (Glover, 2007), (Wade, 2005).

In 1994 FIDIC set up a task group to update the existing Red and Yellow Books, with the key objectives being to harmonise definitions in the different "Books" and to ensure that the Engineer acts impartially, although he/she is employed by the Employer. Following the 1998 test editions of these new contracts and the feedback received on the test editions the publication of the FIDIC Suite of Contracts First Edition (The FIDIC Rainbow (Vosloo & Maritz, 2005)) followed in 1999, consisting of:

i. Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer: The Construction Contract (The FIDIC Red Book 1999);
ii. Conditions of Contract for Plant and Design-Build for Electrical and Mechanical Plant, and for Building and Engineering Works Designed by the Contractor: The Plant and Design/Build Contract (The FIDIC Yellow Book 1999);
iii. Conditions of Contract for EPC/Turnkey Projects: The EPC Turnkey Contract (The FIDIC Silver Book 1999);
iv. The Short Form of Contract (the Green Book) (Battrick & Duggan, n.d.), (Glover & Hughes, 2011), (Turner & Townsend, n.d.).

After extensive development and comments from industry, FIDIC issued the 2nd edition of the so-called rainbow Suite of Contracts in 2017:

i. Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer: The Construction Contract (The FIDIC Red Book 2nd Edition 2017);
ii. Conditions of Contract for Plant and Design – Build for Electrical and Mechanical Plant, and for Building and Engineering Works Designed by the Contractor: The Plant and Design/Build Contract (The FIDIC Yellow Book 2nd Edition 2017);
iii. Conditions of Contract for EPC/Turnkey Projects: The EPC Turnkey Contract (The FIDIC Silver Book 2nd Edition 2017).

The summary of changes from the 1999 1st Edition Red Book to the 2017 2nd Edition can be listed as follows (Clyde & Co LLP, 2017):

i. The risk profile has remained relatively unchanged;
ii. Less user friendly, increased complexity and less flexibility;
iii. Around 50% more voluminous;
iv. The power and the role of the Engineer has expanded even further;
v. Additional costs to be borne by the Employer and increased administrative burden on the Contractor, owing to prescriptive drafting by way of new definitions and step-by-step procedures;
vi. Deeming provisions when new timelines are not met;
vii. Symmetrical rights and obligations between the parties;
viii. Provision contained to enable collaboration between the parties;
ix. A new focus on early dispute avoidance including a separate and enhanced claims and dispute provision, as well as the introduction of the new DAAB.

The selection of which of the FIDIC contracts to use can be daunting, but in reality is based on who designs the works and the key features relating to the pricing mechanism and adoption of risk of the different contracts in the suite. Abu Dief (2017) provides in Table 16 for a tabular representation of the selection of the applicable FIDIC contract, shown as follows:

Table 16 - Recommendation for choosing a FIDIC form of contract (Abu Dief, 2017)

FIDIC Form	**Project Characteristics**	**Design by Employer**	**Design by Contractor**
Red Book	Clear and repeated scope of work	√	
Green Book	Clear and repeated scope of work	√	
White Book	Service agreement of any characteristics	N/A	N/A
Yellow Book	Specified Employer's requirement, implied high risks and a proposal by the Contractor		√
Silver Book	Lump-sum, no high risks, financed by the employer, on party takes complete responsibility of the work, little employer interference- Tailored upon negotiation		√
Blue Book	Dredging and reclamation works. Issued with the collaboration of the International Association of Dredging Companies (IADC), and for dredging and reclamation work. Design provided by the Employer/Engineer.		√
DBO Contract (1st Ed. 2011)	Design-Build-Operate scenario, with a period of a 20 year operation		√
Condition of Subcontract for construction (1st Ed. 2011)	In conjunction with the Red Book	√	

Additionally, Abu Dief (2017) provides for a visual representation in Figure 16 of the selection of the applicable FIDIC contract, shown as follows:

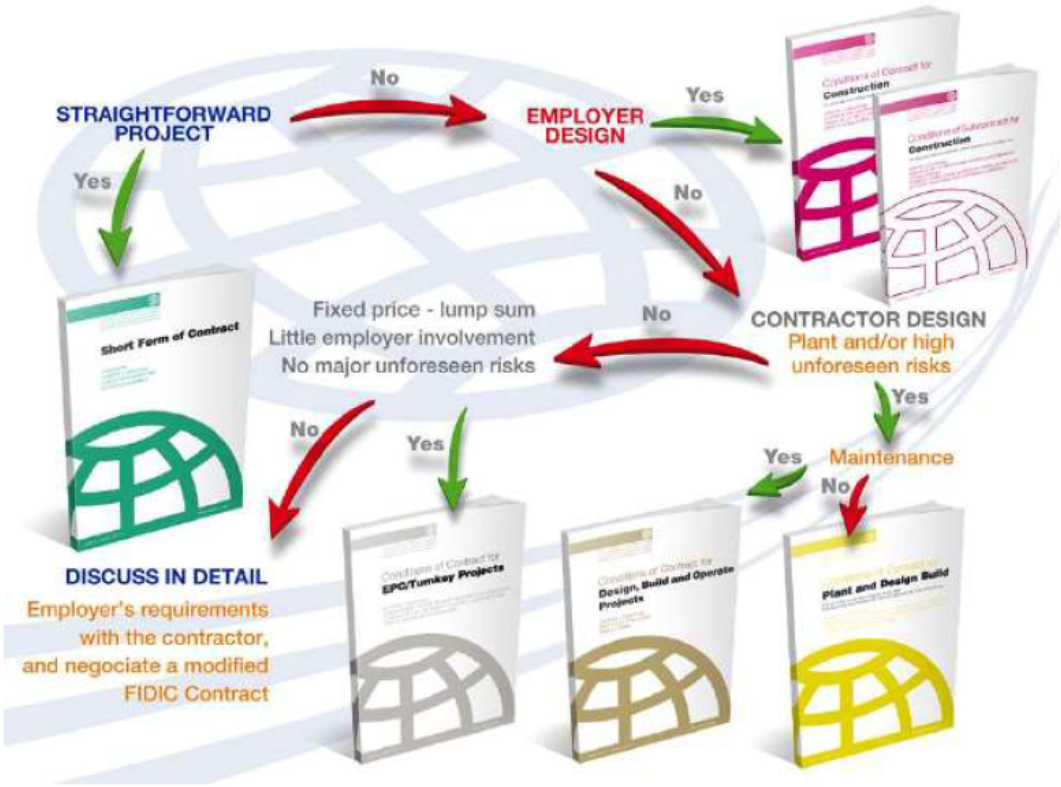


Figure 16 - Choosing the suitable FIDIC Book (Abu Dief, 2017)

6.2 Risks under FIDIC Red Book 2017

6.2.1 Risks due to the obligations of the Employer

The Employer is one of the two Parties to the Contract and is so identified in the Contract Data. On my own analysis I have found the content of Table 17 to be the exhaustive list of express mandatory obligations of the Employer:

Table 17 - FIDIC Red Book 2017 Summary of the Employer's express mandatory obligations following an analysis of the contract

Clause	Role
1.3	Issue electronic original notice, NOD or certificate to the Contractor and copy the Engineer
1.5	Employer gives notice to the Engineer if it finds an ambiguity or discrepancy in the document
1.6	Sign a contract agreement within 35 days after the Contractor receives letter of acceptance
1.8	Specifications and drawings shall be in the custody and care of the Employer
1.8	Two copies of the contract shall be supplied to the Contractor
1.8	Give notice when it becomes aware of an error or defect in a document
1.12	Treat confidential information as confidential
1.13	Comply with all applicable laws
1.13	Obtain the planning, zoning or building permit, permissions, licences and or approvals for the permanent works
2.1	Gives the Contractor right of access to and possession of the site
2.2	Provide the Contractor with assistance to obtain copies of laws and permits required
2.3	Responsible for its personnel and other Contractors co-operate with the Contractor and comply with the Contractor's health and safety obligations
2.4	Finance the contract in terms of the requirements in the Contract Data
2.4	Notify the Contractor if its financial situation changes
2.4	Provide evidence of financial arrangements having been made to meet financial obligations

Clause	Role
2.5	Make available site information including topography of the site and environmental conditions on the site
3.1	Appoint the Engineer
3.2	Not impose further constraints on the Engineer’s authority
3.6	Notify the Contractor of its intention to replace the Engineer
3.7.4	Notify the Engineer of a typographical or clerical or arithmetical error in a determination
4.2	Consent to entity providing performance security
4.2.3	Return the performance security to the Contractor
6.3	Shall not recruit the Contractor's personnel
7.3 a	Examine, inspect, measure and test the materials, plant and workmanship
7.3 b	check progress of manufacture of plant and manufacture of materials
7.3 c	make records
7.3 c	Carry out inspection, measuring and testing on request from the Contractor
8.3	Rely on the Contractor's programme when planning activities
8.4	Give advance warning to the Contractor and the Engineer of listed events and circumstances
10.1	Take over the works
11.1	Jointly with the Contractor inspect a defect or damage
11.4	Fix a date for the remedy of a defect
11.7	Respond to Contractor's notice to have access to the works during defects notification period
14.2	Make advance payment after receiving the advance payment guarantee
14.2.1	Consent to entity providing advance payment guarantee
14..7	The Employer shall pay the Contractor
15.2.1	Notify the Contractor of its intention to terminate the contract

Clause	Role
15.2.4	Notify the Contractor of the release of the release of its equipment or temporary works
15.5	Notify the Contractor of its intention to terminate the contract for convenience
15.7	Pay the Contractor after the termination for the Employer's convenience
16.4	Pay the Contractor after the termination by the Contractor
17.1	Take responsibility for the care of the works on issuance of taking-over certificate
18.2	Notify the Contractor of an exceptional event if it is prevented from performing any obligations under the contract due to an exceptional event
18.3	Use all reasonable endeavours to minimise any delay in the performance of the contract as a result of the exceptional event
18.6 ii	Pay the amount due subsequent to release from performance under law
19.1	Consent to insurance provided by the Contractor
19.1	Bear the loss suffered in the event in the event where there is shared liability and a breach has occasioned non-recovery by the Contractor
20.2.1	Notify the Engineer of a claim against the Contractor
20.2.2	Notify the Engineer of a disagreement with its finding on the notice of claim
20.2.2	Include in its fully detailed claim details of disagreement or why a late submission was justified
20.2.3	Keep contemporary records to substantiate the claim
20.2.4	Submit to the Engineer a fully detailed claim
20.2.5 iii	Submit additional particulars of claim if required by the Engineer
20.2.6	Submit monthly interim fully detailed claims (for claims of a continuing basis)
20.2.6 c	Submit final fully detailed claim (for claims of a continuing basis)
21.1	Jointly with the Contractor appoint the member(s) of the DAAB
21.1	Select a member for the DAAB

Clause	Role
21.1	Consult the first two members of the DAAB and agree the third member
21.1	Agree the remuneration of the DAAB member(s)
21.2	Pay one half of the DAAB member(s) remuneration
21.3	Be present during discussions regarding avoidance of disputes
21.4.2	Make available to the DAAB all information, access to site and appropriate facilities
21.4.3	Comply with the decision of the DAAB
21.4.4	Give a notice of dissatisfaction with the DAAB's decision
21.4.5	Attempt amicable settlement of dispute before arbitration
21.6	Immediately pay an amount due following the ruling in arbitration

Each of the above identified obligations carry certain risk which is borne by the Employer, as its inaction on any of the mandatory obligations has a consequence – the following is a detailed review of each of the mandatory obligations and each's consequential risks.

Important note:

With the three forms of contract in question having wide-ranging and varying mandatory obligations assigned to the Employer, only the 'main obligations' as covered by Segal (2018) will be critically analysed in the main body of the report. The balance of the mandatory obligations are covered in the appendices.

6.2.1.1 Specifications and drawings shall be in the custody and care of the Employer (Sub-Clause 1.8)

The obligation in this sub-clause is simple and straight forward in that the Employer keeps the original contract, specification and drawings and issues the Contractor with two copies of the contract and each subsequent drawing. The Contract Data makes provision for the Employer to supply more with copies (than the two occasioned for in the above sub-clause). According to Glover & Hughes (2018) the Contractor shall have to pay if it requires more copies.

If the Employer fails to provide or delays the process of providing the Contractor with the required copies of the contract, specification and/or drawings the Contractor has the right to EOT and or payment of such cost plus profit in terms of sub-clause 1.9: "*if the Contractor suffers a delay…issue the notified drawing…within a time which is reasonable…, the Contractor shall be entitled subject to Sub-Clause 20.2…to EOT and or payment of such Cost plus Profit.*"

6.2.1.2 Two copies of the contract shall be supplied to the Contractor (Sub-Clause 1.8)

Refer to 6.2.1.1

6.2.1.3 Give notice when it becomes aware of an error or defect in a document (Sub-Clause 1.8)

The Employer is obliged to give notice to the Contractor of an error or defect in a document prepared by the Contractor for use in the execution of the works.

There is no specific result in the general conditions for the Employer's failure to perform such obligation.

6.2.1.4 Gives the Contractor right of access to and possession of the site (Sub-Clause 2.1)

There are several obligations assigned to the Employer in sub-clause 2.1, which according to Segal (2018) is one of the five core obligations of the Employer: that of giving possession of the site to the Contractor.

Firstly, the definition for Site as contained in the general conditions: "*means the places where the Permanent Works are to be executed and to which Plant and Materials are to be delivered, and any other places specified in the Contract as being part of the Site.*"

According to Glover & Hughes (2018) the right to such access and possession of the site may not be exclusive to the Contractor, as the Employer may very well employ other Contractors for different parts of the project, for example a bulk earthworks Contractor may be contracted prior to the general building Contractor and may not have completed all of its permanent works at the time the general building Contractor is contracted.

Although the general conditions is silent on the Contractor's lien over the site, the sub-clause is worded in such a way that the Contractor does enjoy a lien over the site (contrary to the NEC4 ECC, refer to 5.2.1.7 - Allows access to and use of each part of the

Site to the Contractor which is necessary for the work included in the contract (Core Clause 33.1)). In our law the Contractor enjoys a lien over the site subsequent to the Employer giving the Contractor possession of the site. According to Segal (2018) a Contractor's lien is its "*right to retain possession of the site until the Employer has paid to him/her moneys which are lawfully due to him/her (Ploughall (Edms) Bpk v Rae 1971 (1) SA 887 (W)). But he/she may exercise a lien only in respect of debt that is due, not in respect of some future debt (Conress (Pty) Ltd and another v Gallic Construction (Pty) Ltd 1981 (3) SA 73 (W)). The Contractor does not acquire ownership of the site; and remains liable for loss or any damage to the site and the works while he/she remains in occupation and exercising its lien.*"

The Employer is obliged to give such access and possession of the site within the period stated in the Contract Data, if no period is stated in the Contract Data then in terms of the Programme, and if there is no Programme at the time, then in terms of the initial programme submitted in terms of sub-clause 8.3 [Programme].

Glover & Hughes (2018) warns that failure by the Employer to give timely access to the site is one of the biggest causes for dispute, fortunately the general conditions gives the Contractor the right to claim for a delay and/or cost suffered as a result of such failure, subject to sub-clause 20.1 [Claims for Payment and/or EOT] to extension of time and cost plus profit.

6.2.1.5 Appoint the Engineer (Sub-Clause 3.1)

The requirement for the Employer is simple in terms of this sub-clause 3.1 in that it is obliged to appoint the Engineer. According to Segal (2018) one of the five core obligations of the Employer is that of appointing the Engineer (Principal Agent in terms of the JBCC PBA 6.2).

Failure by the Employer to appoint the Engineer would result in the contract not being able to function properly, as Glover & Hughes (2018) rightly asserts that the Engineer is appointed as an agent for the Employer, with the Engineer not being a party to the contract, but crucially it is obliged to carry out its functions as stated in the contract. An important factor for the Employer to consider in its appointment of the Engineer is to ensure that the Engineer has the necessary authority to fulfil its obligations required under the contract.

Note here that the Engineer can be a legal entity, in which case sub-clause 3.1 imposes further obligations on it, being that a natural person shall be appointed by the legal entity

and shall be authorised to act on its behalf. Two requirements are listed for such natural person: the first is that the Engineer is required to be suitably qualified with the experience and competence to act as the Engineer and to be professionally registered as an Engineer; secondly the person shall be fluent in the ruling language of the contract.

6.2.1.6 Not impose further constraints on the Engineer's authority (Sub-Clause 3.2)

In terms of this sub-clause the Employer shall not impose any further constraint on the Engineer other than those specified, with the specified required authority to make certain decisions being contained in the particular conditions. In addition to the above, Glover & Hughes (2018) confirms that the Employer has no authority to impose a requirement on the Engineer to obtain its approval prior to exercising its authority under sub-clause 3.7 [Agreement and Determination].

Failure by the Employer to not impose any further constraints on the Engineer's authority may result in a Dispute.

6.2.1.7 Notify the Contractor of its intention to replace the Engineer (Sub-Clause 3.6)

The Employer is obliged to give 42 days' notice to the Contractor of its intention to replace the Engineer, following which the Contractor is required to make a reasonable objection within 14 days of receiving such notice, failing which the Contractor is deemed to have accepted the proposed replacement. The notice by the Employer is required to include for the name, address and relevant experience of the intended replacement Engineer.

According to Glover & Hughes (2018) this sub-clause 3.6 [Replacement of the Engineer] includes for a provision for the immediate replacement of the Engineer, with the reasons for such immediate replacement being that the Engineer is "*unable to act as a result of death, illness, disability or resignation…*". Note however that such immediate replacement shall only be temporary and that the provisions in this sub-clause shall apply to the Employer to give notice to the Contractor for the intended permanent replacement Engineer.

Failure by the Employer to provide such notice to the Contractor means that the Employer does not enjoy the right to replace the Engineer.

6.2.1.8 Make advance payment after receiving the advance payment guarantee (Sub-Clause 14.2)

The condition precedent to the Employer's obligation to pay an advance to the Contractor is twofold; firstly, if the Contractor did not state the amount of advance payment in the Contract Data this sub-clause shall not apply and in the second instance the payment is only made after the Employer takes receipt of the approved advance payment guarantee. The Employer is well advised to make use of the standard annexed advance payment guarantee as a baseline to compare the Contractor's advance payment guarantee submitted for approval. Such advance payment guarantee is provided in annex E to the general conditions and is fully compliant with the terms and conditions in the general conditions.

The Employer's obligation to make payment for the advance is realized at the time that the Engineer issues the advance payment certificate (note that according to Glover & Hughes (2018) this is a separate payment certificate to the interim payment certificate); such advance payment certificate shall only be issued by the Engineer in the event that the "*Employer has received both the Performance Security and the Advance Payment Guarantee…"*and "*the Engineer has received a copy of the Contractor's application for the advance payment…"*

If the Employer makes delayed payment the Contractor enjoys the right to finance charges in terms of sub-clause 14.8 [Delayed Payment]. Additionally if the Employer fails to make such payment the Contractor has the right in terms of sub-clause 16.1 [Suspension by the Contractor] (c): "*the Employer fails to comply with Sub-Clause 14.7 [Payment]…*" as well as the right to claim for EOT and cost plus profit as a result of the suspension (if the failure is remedied by the Employer) under sub-clause 20.2 [Claims for Payment and/or EOT]. Ultimately if the Employer continues to fail to act on making the payment the Contractor may terminate the contract under sub-clause 16.2 [Termination by the Contractor].

6.2.1.9 Consent to entity providing advance payment guarantee (Sub-Clause 14.2.1)

Sub-clause 14.2 [Advance Payment] largely includes for the Contractor's obligations in providing the advance payment security.

However the Employer has the obligation to give its consent to the entity issuing the advance payment security and from the country the security is issued, with Glover &

Hughes (2018) highlighting that such advance payment security being required to be in the form the Employer approves. Such performance security is provided in the contract annex E and is available to the tenderers to take into consideration. Further, the Employer is required to ensure that it receives an advance payment security that is compliant with the applicable law.

Refer to 6.2.1.8 for the rights the Contractor enjoys if the Employer fails this obligation.

6.2.1.10 The Employer shall pay the Contractor (Sub-Clause 14.7)

Among all of the Employer's implied and express obligations, the payment of the monies due for the Contractor's obligations is undoubtably the most important of all of these obligations (Hughes, et al., 2015), (Segal, 2018).

The payment certificate issued by the Engineer is a liquid document "*wherein a debtor acknowledges over its signature, or that of a duly authorised agent, its indebtedness in a fixed and determined sum of money*" (Segal, 2018), as was ruled in the seminal case of *Inter-Union Finance Ltd v Franskraalstrand (Edms) Bpk and Others 1965 (4) SA 180 (W)*. According to Segal (2018) the building contract, which is a *locatio conducto operis* (the letting and hiring of work) the payment of interim payment certificates is a deviation from the common law principal of the payment being made when the work is done, however construction contracts typically address this issue, as the Contractors do not necessarily have the cash at hand to fund the entire construction contract for the Employer only to pay for it all at completion. Such payment does however not mean that the work has been accepted, or that it is to the required standard.

If the Employer makes delayed payment (after the 56-day period from the receipt of the claim from the Contractor under sub-clause 14.3 [Application for Interim Payment]) the Contractor enjoys the right to finance charges in terms of sub-clause 14.8 [Delayed Payment]. Additionally, if the Employer fails to make such payment the Contractor has the right in terms of sub-clause 16.1 [Suspension by the Contractor] (c): "*the Employer fails to comply with Sub-Clause 14.7 [Payment]…*" as well as the right to claim for EOT and cost plus profit as a result of the suspension (if the failure is remedied by the Employer) under sub-clause 20.2 [Claims For Payment and/or EOT]. Ultimately, if the Employer continues to fail to act on making the payment the Contractor may terminate the contract under sub-clause 16.2 [Termination by the Contractor].

6.2.1.11 Pay the Contractor after the termination for the Employer's convenience (Sub-Clause 15.7)

In terms of sub-clause 15.6 [Valuation after Termination for Employer's Convenience] the Contractor submits to the Engineer (in the event of termination for the Employer's convenience) the following:

"*(a) the value of work done, which shall include:*

(i) the matters described in sub-paragraphs (a) to (e) of Sub-Clause 18.5 [Optional Termination], and

(ii) any additions and/or deductions, and the balance due (if any), by reference to the matters described in sub-paragraphs (a) and (b) of Sub-Clause 14.3 [Issue of PFC]; and

(b) the amount of any loss of profit or other losses and damages suffered by the Contractor as a result of this termination."

Following the submission, the Engineer is obliged to value the above and certify for payment the amounts due to the Contractor, which payment is required to be made within 112 days of receipt of such submission by the Contractor; which according to Glover & Hughes (2018) puts significant pressure on the Engineer to complete its valuation in time for the payment to be made on time. The payment certificate is a liquid document, which bestows a debt on one party to pay another, refer to 6.2.1.10 for reference on the Employer with regards to payment.

6.2.1.12 Pay the Contractor after the termination by the Contractor (Sub-Clause 16.4)

In the event that the Contractor exercised its rights to terminate the contract (the provisions for optional termination are laid down in sub-clause 18.5 [Optional Termination], according to Glover & Hughes (2018) the Employer is obliged to make payment promptly in accordance with the provisions under sub-clause 18.5 [Optional Termination] and in the second case subject to the evaluation of a claim submitted under sub-clause 20.2 [Claims for Payment and/or EOT] (subject of course to the Contractor being compliant with the obligations) to pay the Contractor for any loss of profit or other losses and damages suffered by the Contractor as a direct result of it terminating the contract. Following its determination under sub-clause 3.7 [Agreement or Determination], the Engineer is obliged to issue a payment certificate under sub-clause 14.6 [Issue of IPC] from which the Employer is obliged to make the payment to the Contractor, with no

statement being required from the Contractor in order for the Engineer to prepare such payment certificate.

The Employer is obliged under sub-clause 14.7 [Payment] to make payment to the Contractor, which if such payment is delayed gives the Contractor the right in terms of sub-clause 14.8 [Delayed Payment] for its financing cost.

6.2.1.13 Pay the amount due subsequent to release from performance under law (Sub-Clause 18.6 ii)

Without doing a study on the reasons for the release for the parties resulting from either of them not being able to perform under law, Glover & Hughes (2018) asserts that this clause is not akin to a 'frustration' clause, rather it gives rights to a claiming party in events where performance becomes 'prevented', rather than for them to be 'impossible'.

The Employer is obliged under this sub-clause 18.6 [Release from Performance Under Law] to pay the same amount as if under optional termination under sub-clause 18.5 [Optional Termination], which results in the Engineer having to determine the claim in accordance with sub-clause 3.7 [Agreement or Determination] and certify the amount due to the Contractor under sub-clause 14.6 [Issue of IPC]. The Employer is required under sub-clause 14.7 [Payment] to make payment to the Contractor, which if such payment is delayed gives the Contractor the right in terms of sub-clause 14.8 [Delayed Payment] for its financing cost.

6.2.2 Risks due to the obligations of the Engineer

The Engineer is an agent of the Employer (but not a party to the contract) and is identified in the Contract Data. On my own analysis I have found the content of Table 18 to be the exhaustive list of express mandatory obligations of the Engineer:

Table 18 - FIDIC Red Book 2017 Summary of the Engineer's express mandatory obligations following an analysis of the contract

Clause	Role
1.3	Sign a notice
1.3	Issue electronic original notice, NOD or certificate to the one party and copy the other
1.5	Issue clarification or instruction when notified about an ambiguity or discrepancy in the documents
1.8	Give notice when it becomes aware of an error or defect in a document

Clause	Role
1.12	Treat confidential information as confidential
2.4	Estimate the remaining contract price to be paid by the Employer
2.5	Specify the original survey control points, lines and levels of reference
3.1	Carry out the duties assigned to the Engineer in the contract
3.2	Act as a skilled professional and for the Employer
3.3	Give notice when assigning or delegating certain duties
3.5	Respond to the Contractor's notice (regarding Engineer’s instruction) within 7 days
3.7	Act neutrally between the parties under sub-clause 3.7
3.7.1	Consult with both parties jointly and/or separately to reach agreement
3.7.2	Make a fair determination
3.7.3	Give notice of agreement within 42 days
3.7.4	Comply with each agreement or determination
3.8	Keep record of each management meeting
4.3	Consent to the proposed Contractor's representative
4.4.1	Notify the Contractor of its findings on the Contractor's documents submitted for review
4.7.3	Agree or determine under sub-clause 3.7 errors identified under sub-clause 4.7.2
4.12.2	Promptly inspect and investigate unforeseen physical conditions
4.17	Consent to remove from site any major items of Contractor's equipment
4.19	Consent to the apparatus used for the measuring quantities of services consumed
4.22	Acknowledge additional working areas so identified by the Contractor
4.23	Inspect and identify archaeological findings
5.1	Consent to the Contractor's proposed subcontractors

Clause	Role
5.2.1	Instruct the Contractor to employ a nominated subcontractor
5.2.4	Notify the Contractor of the amount to be paid directly to a nominated subcontractor by the Employer
6.3	Shall not recruit the Contractor's personnel
6.5	Consent to work being carried out outside normal working hours
6.10	Agree to proposed changes to Contractor's records
6.12	Consent to change of key personnel
7.2	Consent to use of materials submitted by the Contractor
7.3	Promptly instruct the Contractor that the Employer's personnel do not require to inspect material or plant
7.4	Notify the Contractor of its attendance of Contractor's tests
7.5	Notify the Contractor describing item of plant, material, design or workmanship that is found to be defective
8.1	Notify the Contractor of the commencement date
8.3	Review the initial and each revised programme
8.4	Give advance warning to the parties of listed events and circumstances
8.5	Review previous determinations under sub-clause 3.7
8.13	Jointly with the Contractor examine the works or plant or materials affected by suspension
9.1	Instruct the Contractor on number of days to commence tests on completion
9.1	Review test results report
9.2	Send a copy of the test results of tests carried out by the Employer
10.1	Respond within 28 days of receipt of the Contractor's notice for taking over
10.3	Immediately issue a taking over certificate when the Employer's personnel prevent the Contractor from carrying out tests on completion

Clause	Role
11.2	Agree or determine the cost of remedying defects
11.6	Notifying the Contractor regarding further tests after remedying defects
11.9	Issue the performance certificate
12.1	Notify the Contractor of works to be measured on site
12.1	Prepare the measures for the permanent works to be measured from records
12.1	Agree or determine the measurement records
12.3	Value each item of work by applying each item's measurement with the appropriate rate or price for the item
12.3	Agree or determine a rate or price
13.1	Notify the Contractor of cancelling, confirming or altering an instruction to vary the works
13.2	Notify the Contractor of its consent to the Contractor's proposal to vary
13.3.1	Agree or determine EOT or adjustment to the contract value related a variation instruction
13.3.2	Notify the Contractor of its consent to the Contractor's proposal to vary
13.4	Instruct the Contractor regarding provisional sums
13.5	Sign and promptly return to the Contractor the daywork schedule
13.5	Agree or determine the resources related to daywork
13.6 (ii)	Instruct a variation
13.6 (ii)	Request a proposal for a variation
13.7	Use a provisional index for the adjustment of rates until a current cost index is available
14.2.2	Issue the advance payment certificate within 14 days
14.5	Agree or determine each amount to be added for payment of plant and materials
14.6.1	Issue the interim payment certificate
14.6.2	Notify the Contractor of withholding amounts in an IPC

Clause	Role
14.6.3	Correct or modify an amount in the next payment certificate
14.9	Certify the release of retention money
14.10	Issue an IPC following the receipt of the statement at completion
14.11.1	Notify the Contractor of disagreement of any part of the final statement
14.13	Issue the final payment certificate
15.3	Agree or determine the valuation after termination for Contractor's default
15.6	Agree or determine the valuation and loss of profit after termination for Employer's convenience
15.6	Issue a payment certificate following the determination as contemplated in sub-clause 15.6
18.5	Agree or determine the value of work done as a result of termination as a result of an exceptional event
18.6	Issue a payment certificate following the determination as contemplated in sub-clause 18.6
20.2.2	Respond to a claim submitted
20.2.4	Following 14 days non-submission of the substantiating basis of the claim notify the Contractor of expiry
20.2.5	Agree or determine the fully substantiated claim submitted
20.2.6	Respond on the contractual or other legal basis of a continuing claim submitted
20.2.7	Include in each payment certificate amounts for any claim as may have been reasonably substantiated
21.2	Include in the IPC the amount deducted for the payment of the DAAB when not paid for by the Contractor

Each of the above identified actions carry certain risk which is borne by the Employer, as its appointed Engineer's inaction on any of the mandatory obligations has a consequence – the following is a detailed review of each of the mandatory obligations and each's consequential risks.

Important note:

With the three forms of contract in question having wide-ranging and varying mandatory obligations assigned to the Principal Agent / Project Manager / the Engineer, the following comparison is based on those obligations as covered by Palmer (2006) in his comparison of the same obligations.

6.2.2.1 Sign a notice (Sub-Clause 1.3)

According to Glover & Hughes (2018) sub-clause 1.3 [Notices and Other Communications] makes distinction between notices and other types of communication and such communications is deemed to have been received the day after transmission, with the contract making it clear that such the communication will only take effect when is deemed to have been received.

If the Engineer fails to sign the notice requirement (for what constitutes a notice has not been met) such the notice will be deemed not to be valid.

6.2.2.2 Issue electronic original notice, NOD or certificate to the one party and copy the other (Sub-Clause 1.3)

Refer to 12.10.1.2, except that the same obligation binds the Engineer.

6.2.2.3 Specify the original survey control points, lines and levels of reference (Sub-Clause 2.5)

Refer to 12.10.1.12 for the Employer's obligations with regards to site information and the like.

From experience good practice is to include in the specification (as this sub-clause 2.5 [Site Data and Items of Reference] clearly states shall be done) the original survey control points, lines and levels of reference for the tenderers to best price the tender. The alternative is that the Engineer issues this information with a notice to the Contractor (however, this may give rise to a claim from the Contractor).

Owing to the fact that the Contractor's tender price is based on the information required in terms of clause 2.5 [Site Data and Items of Reference], the Engineer is best advised to make available all relevant data, as the Contractor may claim for extension of time in terms of sub-clause 8.5 [Extension of Time for Completion] based on the data provided, as well as give notice to the Engineer of errors on the data provided in terms of sub-clause 4.7.2 [Errors], with the result from the remedies contained in sub-clause 4.7.3 [Agreement

or Determination of rectification measures, delay and/or Cost] and sub-clause 20.2 [Claims for Payment and/or EOT] being that the Contractor may claim for extension of time with cost.

6.2.2.4 Carry out the duties assigned to the Engineer in the contract (Sub-Clause 3.1)

Glover & Hughes (2018) indicate that the Engineer effectively acts as the Employer's agent, as the Employer appoints the Engineer.

The obligations under sub-clause 3.1 [The Engineer] for the Engineer, is in the first instance to carry out its duties assigned under the contract, with the premise that the Engineer can in fact be a legal entity (so described in the Contract Data). If the Engineer is identified as a legal entity, then such legal entity is obliged to appoint and authorise a natural person to act on its behalf under the contract.

The Engineer is obliged to be a suitably qualified, experienced and competent person and shall be fluent in the ruling language of the contract.

If the Engineer is a legal entity it is obliged to notify the parties of the natural person appointed to act on its behalf and shall similarly notify the parties on the revocation of such authority.

Failure by the Engineer to fulfil this obligation means that the Engineer fails in its obligation under sub-clause 3.1 [The Engineer]: "*the Engineer, who shall carry out the duties assigned to the Engineer in the Contract*"; if the Employer considers the Engineer's failure to be of such a nature that drastic action is warranted, the Employer has the right to replace the Engineer under sub-clause 3.6 [Replacement of the Engineer].

6.2.2.5 Respond to the Contractor's notice (regarding Engineer's instruction) within 7 days (Sub-Clause 3.5)

According to Glover & Hughes (2018) the Contractor is obliged to comply with the Engineer's (or Engineer's representative or duly delegated assistant) instructions, except when such instruction constitutes a variation under sub-clause 13.3.1.

If the Contractor considers that the instruction:

"*i. Constitutes a variation;*

ii. involves work that is already part of an existing variation;

iii. does not comply with the applicable Laws;

iv. will reduce the safety of the Works;

v. is technically impossible."

Then the Contractor is obliged to immediately and without commencing with the works give notice to the Engineer with reasons. The Engineer is obliged to give a notice to the Contractor "*confirming, reversing or varying the instruction*" within 7 days of receipt of the Contractor's notice.

Failure by the Engineer to give notice to the Contractor "*confirming, reversing or varying the instruction*" within 7 days of receipt of the above Contractor's notice shall deem the Engineer to revoke the instruction issued.

6.2.2.6 Act neutrally between the parties under sub-clause 3.7 (Sub-Clause 3.7)

The obligation for the Engineer when acting under the entire sub-clause 3.7 [Agreement or Determination] is to act neutrally between the parties. Glover & Hughes (2018) indicate that it there is no definition as to what 'neutrally' constitutes and that this may very well lead to disputes in the future. However, in the Guidance to the Special Conditions the authors clarify that the intention with this term is for the Engineer to treat "*both Parties, even-handedly, in a fair-handed and unbiased manner*".

6.2.2.7 Consult with both parties jointly and/or separately to reach agreement (Sub-Clause 3.7.1)

In order to do any sort of analysis on the Engineer's role in consulting, agreeing or determining issues between the parties, one must understand what these may be related to. Glover & Hughes (2018) have done the research and found that the following are the sub-clauses under which the Engineer may be required to make determinations:

1.9 Delayed Drawings or Instructions;

1.13 Compliance with Laws;

2.1 Right of Access to the Site;

4.6 Co-Operation;

4.7 Setting Out;

4.12 Unforeseeable Physical Conditions;

4.15 Access Route;

4.23 Archaeological and Geological Findings;

7.4 Testing by the Contractor;

7.5 Defects and Rejection;

7.6 Remedial Work;

8.5 Extension of Time for Completion;

8.6 Delays Caused by Authorities;

8.7 Rate of Progress;

8.8 Delay Damages;

8.10 Consequences of Employer's Suspension;

9.2 Delayed Tests;

9.4 Failure to Pass Tests on Completion;

10.2 Taking Over Parts;

10.3 Interference with Tests on Completion;

11.2 Cost of Remedying Defects;

11.3 Extension of Defects Notification Period;

11.4 Failure to Remedy Defects;

11.7 Right of Access after Taking Over;

11.8 Contractor to Search;

11.11 Clearance of Site;

12.1 Works to be Measured;

12.3 Valuation of the Works;

13.3 Variation Procedure;

13.5 Daywork;

13.6 Adjustment for Changes in Laws;

14.4 Schedule of Payments;

14.5 Plant and Materials intended for the Works;

14.6 Issue of IPC;

15.3 Valuation after Termination for Contractor's Default;

15.4 Payment after Termination for Contractor's Default;

15.6 Valuation after Termination for Employer's Convenience;

16.1 Suspension by the Contractor;

16.2 Termination by the Contractor;

16.3 Contractor's Obligations after Termination;

16.4 Payment after Termination by Contractor;

17.2 Liability for Care of the Works;

18.4 Consequences of an Exceptional Event;

18.5 Optional Termination.

Figure 17 shows graphically the process of consultation and the required notices under sub-clause 3.7.1 [Consultation to reach agreement], 3.7.3 [Time limits] and 3.7.4 [Effect of agreement or determination]:

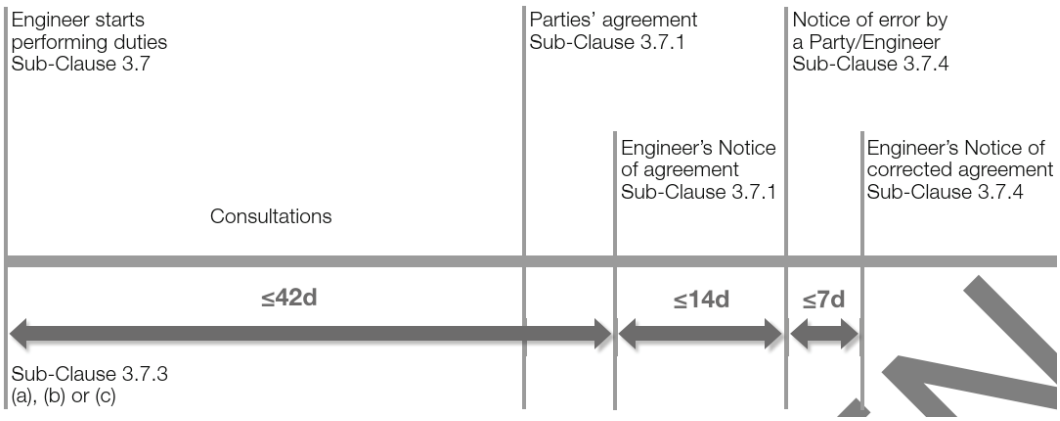


Figure 17 - Engineer to consult with the parties under sub-clause 3.7.1 of FIDIC Red Book (International Federation of Consulting Engineers (FIDIC), 2017)

Glover & Hughes (2018) indicate that as part of the increased emphasis on dispute avoidance, the Engineer is obliged to promptly consult either jointly and/or separately with the parties in order to first attempt to reach a settlement without having to make a determination on of the disagreement under sub-clause 3.7.2. The Engineer is obliged to record and distribute the records of such consultations to the parties. If the parties are able to settle during the consultation period (such time limit as stated in sub-clause 3.7.3 – 42 days) the Engineer is obliged to give a "Notice of the Parties' Agreement" to both parties and include in such notice the a copy of the agreement reached, which is required to be signed by both parties.

If no agreement is reached within the time limit, the Engineer must notify the parties of the same and immediately proceed with its determination under sub-clause 3.7.2.

Failure by the Engineer to give such notice of the parties' agreement shall under sub-clause 3.7.3 (ii) "*be deemed to be a Dispute which may be referred by either Party to the DAAB for its decision under Sub-Clause 21.4…without the need for a NOD…*"

6.2.2.8 Make a fair determination (Sub-Clause 3.7.2)

Figure 18 - Engineer to make a fair determination under sub-clause 3.7.2 of FIDIC Red Book Figure 18 is a visual representation of the process where the parties were not able to come to an agreement under sub-clause 3.7.1, and where the Engineer is required make a fair determination under sub-clause 3.7.2:

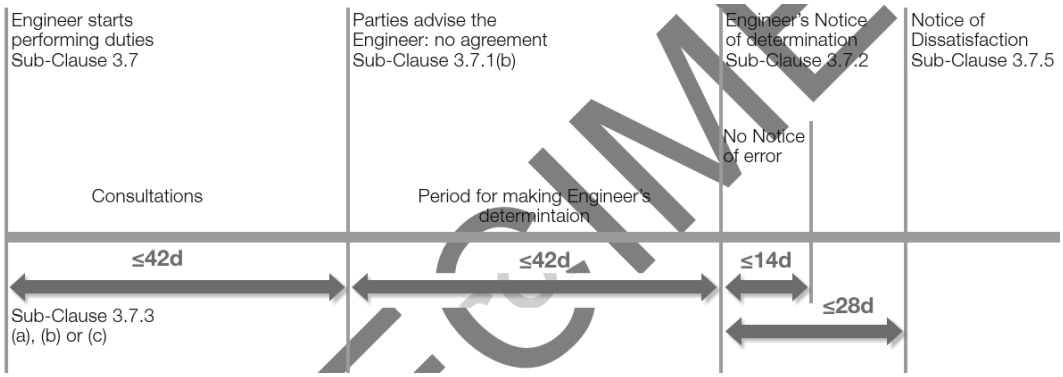


Figure 18 - Engineer to make a fair determination under sub-clause 3.7.2 of FIDIC Red Book (International Federation of Consulting Engineers (FIDIC), 2017)

Glover & Hughes (2018) cite the case of *Scheldebouw BV v St James Homes (Grosvenor Dock) Ltd [2006] EWHC 89 (TCC)* to underline the obligation of the Engineer to act fairly and impartially, where the judge ruled that: "*When performing its decision-making function, the decision-maker is required to act in a manner which has variously been described as independent, impartial, fair and honest. These concepts are overlapping, but not synonymous. They connote that the decision-maker must use its professional skills and its best endeavours to reach the right decision, as opposed to a decision which favours the Employer.*"

Such determination shall be made within the time limits as stated in sub-clause 3.7.3, being 42 days or such other period as may be agreed with both parties and such determination shall be delivered to the parties by a notice stating: "*Notice of the Engineer's Determination*".

Failure by the Engineer to make a fair determination means that the Engineer fails in its obligation under sub-clause 3.1 [The Engineer]: "*the Engineer, who shall carry out the*

duties assigned to the Engineer in the Contract"; if the Employer considers the Engineer's failure to be of such a nature that drastic action is warranted, the Employer has the right to replace the Engineer under sub-clause 3.6 [Replacement of the Engineer].

Refer to 6.2.2.9 for the consequences as a result of the failure to issue such notice within the time period.

6.2.2.9 Give notice of agreement within 42 days (Sub-Clause 3.7.3)

Glover & Hughes (2018) cautions the Engineer to take particular notice of this sub-clause 3.7.3, as the 42 day time limit for the notice of agreement (or such other time limit as may be agreed to by both parties) applies from different times, depending on the circumstances; the Engineer must issue such notice within:

"*(a) in the case of a matter to be agreed or determined (not a Claim), the date of commencement of the time limit for agreement as stated in the applicable sub-clause of the conditions;*

(b) in the case of a Claim under Sub-Cl.20.1(c), i.e. a claim by either Party for entitlement or relief other than an Employer's claim for additional payment or a Contractor's claim for any additional payment and/or EOT, the date that the Engineer receives a Notice under Sub-Cl.20.1 from the Claiming Party; and

(c) in the case of a Claim under Sub-Cl.20.1(a) or (b), i.e. and Employer's claim for additional payment or a Contractor's Claim for any additional payment and/or to EOT, the date the Engineer receives:

i. a fully detailed Claim under Sub-Cl.20.2.4; or

ii. in the case of a Claim of continuing effect under Sub-Cl.20.2.6, and interim or final fully detailed Claim." (Glover & Hughes, 2018)

The notice of determination is required to be issued to the parties within 42 days of the date the notice is required to be given under sub-clause 3.7.1, the effect of which is that the notice is required to be given within 42 days of the Engineer giving notice to the parties that an agreement has not been reached within the time limit, or that both parties have agreed that an agreement will not be reached.

Failure by the Engineer to give such notice within the time limit (in the case of a claim) shall under sub-clause 3.7.3 (i) "*in the case of a Claim, the Engineer shall be deemed to have given a determination rejecting the Claim…*"; consequent to which the Contractor can proceed to make a clause 21 [Disputes and Arbitration] referral to the DAAB.

Failure by the Engineer to give such notice within the time limit (in the case of a matter to be agreed or determined) shall under sub-clause 3.7.3 (ii) "*be deemed to be a Dispute which may be referred by either Party to the DAAB for its decision under Sub-Clause 21.4…without the need for a NOD…*"

6.2.2.10 Comply with each agreement or determination (Sub-Clause 3.7.4)

The obligation under sub-clause 3.7.4 is that in the first instance in that the agreement or determination shall be binding on the parties and that such agreement or determination shall be complied with by the Engineer, unless corrected. If such an agreement or determination means payment (to whichever party), then the Engineer shall include such payment in the following payment certificate.

If some error of a typographical, or clerical or arithmetical nature is found by the Engineer then the parties are to be advised of the same immediately. If such error is found by a party, the party is obliged to notify the Engineer of the same; if the Engineer does not agree then the obligation exists to immediately advise the parties accordingly.

Within 7 days of finding the error or being notified of the error the Engineer shall give notice of the corrected agreement or determination, which corrected version shall apply for the purpose of the contract.

Figure 19 shows process where the parties were not able to come to an agreement under sub-clause 3.7.1, and where the Engineer is required make a fair determination under sub-clause 3.7.2 within 42 days and an error was found in the Engineer's determination:

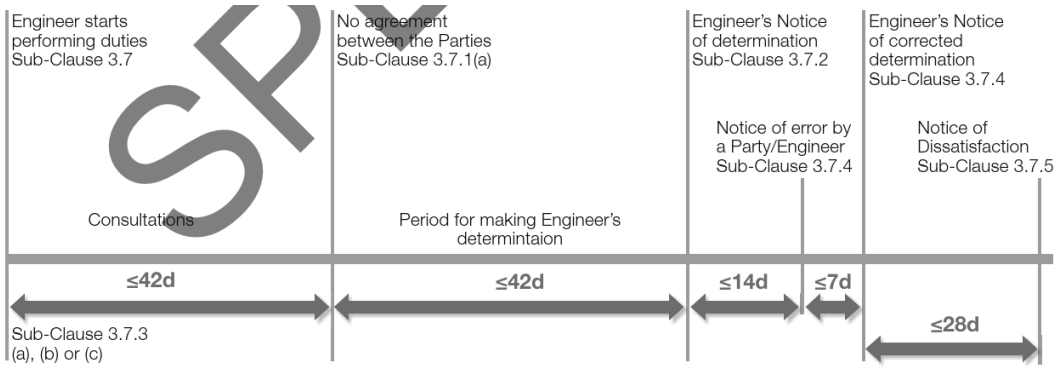


Figure 19 - No agreement within 42 days, the Engineer to make a determination (International Federation of Consulting Engineers (FIDIC), 2017)

There are various complications if the Engineer does not comply with the agreement or determination, depending on which sub-clause (as listed in 6.2.2.7) is applicable. These may include suspension, termination or referral to dispute.

6.2.2.11 Notify the Contractor of its findings on the Contractor's documents submitted for review (Sub-Clause 4.4.1)

Should the specification or the conditions of contract specify any documents that the Contractor is required to submit to the Engineer for review, the Contractor shall submit the same and the Engineer shall be notified of such documents for review and that it complies with the contract.

According to Glover & Hughes (2018) the Engineer is obliged to give the Contractor either a notice of no-objection, or that the Contractor's document fails with the contract (with reasons) within 21 days of the Contractor's notice.

Failure by the Engineer to give such notice as required under sub-clause 4.4.1, the Engineer shall be deemed to have given a notice of no-objection to the Contractor's document submitted for review.

6.2.2.12 Agree or determine under sub-clause 3.7 errors identified under sub-clause 4.7.2 (Sub-Clause 4.7.3)

After receiving a notice from the Contractor under sub-clause 4.7.2 the Engineer is obliged under this sub-clause 4.7.3 [Agreement or Determination of rectification measures, delay and/or Cost] to agree or determine under sub-clause 3.7 [Agreement or Determination]:

"*(a) whether or not there is an error in the items of reference;*

(b) whether or not (taking into account of cost and time) an experienced Contractor exercising due care would have discovered such error

- *When examining the Site and the Employer's Requirements before submitting the Tender; or*
- *When scrutinising the Employer's Requirements under Sub-Clause 5.1…, if the items of reference are specified in the Employer's Requirements and the Contractor's Notice is given after the expiry of the period stated in sub-paragraph (a) of Sub-Clause 4.2; and*

(c) what measures (if any) the Contractor is required to take to rectify the error"

Refer to 6.2.2.6 to 6.2.2.10 for the results of non-compliance by the Engineer to act on its obligation to agree or determine under sub-clause 3.7 [Agreement or Determination].

6.2.2.13 Notify the Contractor of its attendance of Contractor's tests (Sub-Clause 7.4)

The Contractor is required to provide everything necessary to conduct the tests specified in the contract, further to which the Contractor is to give notice to the Engineer as to the time and place the tests are to take place. The Engineer in turn is obliged to give no less than 72 hours' notice of its intention to attend such test(s).

Failure by the Engineer to attend such tests gives the Contractor the right under sub-clause 7.4 [Testing by the Contractor] to proceed with the tests, which tests shall then be deemed to have been done in the Engineer's presence; with a further effect of such non-attendance being that the readings from such tests are also deemed to be accurate.

6.2.2.14 Notify the Contractor describing item of plant, material, design or workmanship that is found to be defective (Sub-Clause 7.5)

The first obligation for the Engineer under sub-clause 7.5 [Defects and Rejection] is to give notice to the Contractor if any plant, material, design or workmanship is found to be defective as a result of an examination, inspection, measurement or testing performed. Such notice includes for a description of the plant, material, design or workmanship that has been found to be defective.

The risk to the Employer for the Engineer failing in its obligation under this sub-clause is the defective plant, material, design or workmanship could end up in the works; which failure the Employer is likely to challenge the Engineer for this substantial failure to act.

6.2.2.15 Review the initial and each revised programme (Sub-Clause 8.3)

The programme is defined under sub-clause 1.1.66 as: "*... a detailed time programme prepared and submitted by the Contractor to which the Engineer has given (or is deemed to have given) a Notice of No-objection under Sub-Clause 8.3 [Programme]*."

The Contractor is required to prepare an initial programme and revised programme (whenever the actual progress on site is inconsistent with the programme or is otherwise inconsistent with the Contractor's obligations) for the works for the Engineer's review.

The programme is required to include for the following under sub-clause 8.3:

"*(a) the Commencement Date and the Time for Completion, of the Works and of each Section (if any);*

(b) the date right of access to and possession of (each part of) the Site is to be given to the Contractor in accordance with the time (or times) stated in the Contract Data. If not so stated, the dates the Contractor requires the Employer to give right of access to and possession of (each part of) the Site;

(c) the order in which the Contractor intends to carry out the Works, including the anticipated timing of each stage of design, 20 preparation and submission of Contractor's Documents, procurement, manufacture, inspection, delivery to Site, construction, erection, installation, work to be undertaken by any nominated Subcontractor (as defined in Clause 4.5 [Nominated Subcontractors]), testing, commissioning and trial operation;

(d) the Review periods under Sub-Clause 5.2.2 [Review by Engineer], and periods for Review for any other submissions specified in the Employer's Requirements or required under these Conditions;

(e) the sequence and timing of inspections and tests specified in, or required by, the Contract;

(f) for a revised programme: the sequence and timing of the remedial work (if any) to which the Engineer has given a Notice of No-objection under Sub-Clause 7.5 [Defects and Rejection] and/or the remedial work (if any) instructed under Sub-Clause 7.6 [Remedial Work];

(g) all activities (to the level of detail specified in the Employer's Requirements), logically linked and showing the earliest and latest start and finish dates for each activity, the float (if any), and the critical path(s);

(h) the dates of all locally recognised days of rest and holiday periods (if any);

(i) all key delivery dates of Plant and Materials;

(j) for a revised programme and for each activity: the actual progress to date, any delay to such progress and the effects of such delay on other activities (if any); and

(k) a supporting report which includes

(i) a description of all the major stages of the execution of the Works;

(ii) a general description of the methods which the Contractor intend to adopt in the execution of the Works; I

(iii) details showing the Contractor's reasonable estimate of the number of each class of Contractor's Personnel, and of each type of Contractor's Equipment, required on the Site, for each major stage of the execution of the Works;

(iv) if a revised programme, identification of any significant changes to the previous programme submitted by the Contractor; and

(v) the Contractor's proposals to overcome the effects of any delay(s) on progress of the Works."

The Engineer is not under a discretionary obligation to give notice to the Contractor under sub-clause 8.3 "*stating the extent to which it does not comply with the Contract or ceases to reflect actual progress or is otherwise inconsistent with the Contractor's obligations*". Such notice by the Engineer is required within 21 days after receiving the initial programme and 14 days after receiving the revised programme. According to Glover & Hughes (2018) the 2017 version of the Red Book provides that the Engineer gives a notice of no-objection, not approval as was the case in the 1999 version of the Red Book.

Failure by the Engineer to give such notice within the above time periods shall mean that the Engineer is deemed to have given a notice of no-objection and the initial or revised programme shall be the programme.

6.2.2.16 Review previous determinations under sub-clause 3.7 (Sub-Clause 8.5)

Sub-clause 8.5 [Extension of Time for Completion] is of such magnitude that covering the subject is beyond the ambit of this report, as such only the obligation of the Engineer is covered here.

According to Glover & Hughes (2018) the causes for EOT is listed in items (a) to (e) under sub-clause 8.5, with item (b) identifying other sub-clauses as references for the causes for EOT, as such Table 19 is a list of the sub-clauses that give rise for an extension of time:

Table 19 - FIDIC Red Book 2017 causes for EOT under sub-clause 8.5(b)

Sub-cl no.	Description	Type of possible award
1.9	Delayed Drawings or instructions	EOT, cost and profit
1.13	Compliance with Laws	EOT, cost and profit

Sub-cl no.	Description	Type of possible award
2.1	Right of Access to the Site	EOT, cost and profit
4.6	Cooperation	EOT, cost and profit
4.7	Setting Out	EOT, cost and profit
4.12.4	Unforeseeable Physical Conditions	EOT and cost, no profit
4.15	Access Route	EOT and cost, no profit
4.23	Archaeological and Geological Findings	EOT and cost, no profit
7.4	Testing by the Contractor	EOT, cost and profit
7.6	Remedial Work	EOT, cost and profit
8.5	Extension of Time for Completion—variation, climate disruptions, personnel or goods shortages caused by epidemic or governmental actions, or delay, impediment or prevention caused by the Employer	EOT Only
8.10	Suspension initiated by the Engineer	EOT, cost and profit
8.12	Prolonged suspension	EOT, cost and profit
10.3	Interference with Tests on Completion	EOT, cost and profit
13.3	Variation Procedure	EOT, cost and profit
13.6	Adjustments for Changes in Laws	EOT and cost, no profit
16.1	Suspension by Contractor	EOT, cost and profit
16.2	Termination by Contractor	EOT, cost and profit
17.2	Liability for the care of the Works	EOT, cost and profit
18.4	Consequences of an Exceptional Event	EOT and cost, no profit

The Engineer agrees or determines under sub-clause 3.7 [Agreement or Determination], the details of which is dealt with in 6.2.2.6 to 6.2.2.10. Under this sub-clause 8.5 [Extension of Time for Completion] the Engineer is obliged when determining each EOT

under sub-clause 20.2 [Claims for Payment and/or EOT] to review its previous determinations under sub-clause 3.7 [Agreement or Determination] and may increase, but not decrease the total extension of time.

Although it is not specifically stated what the result is of the Engineer's failure (to do such a review), I contend that such failure by the Engineer shall (under sub-clause 3.7.5 [Dissatisfaction with the Engineer's Determination]) mean that the Contractor issues an NOD to the Employer and copy the Engineer, which could ultimately result in the matter being referred to the DAAB under sub-clause 21.4 [Obtaining DAAB's Decision].

6.2.2.17 Instruct the Contractor on number of days to commence tests on completion (Sub-Clause 9.1)

Tests on Completion is defined under sub-clause 1.1.83 as: "*the tests which are specified in the Contract or agreed by both Parties or instructed as a Variation, and which are carried out under Clause 9…before the Works or a Section (as the case may be) are taken over under Clause 10…*"

Glover & Hughes (2018) indicate that the purpose of the "*Tests is to demonstrate that the Works comply with the Employer's Requirements and that the Works met the specified standards and any Performance Guarantees that may have been entered into.*"

Under sub-clause 9.1 [Contractor's Obligations] the Contractor is required to give the Engineer at least 21 days' notice of the date on which it will be ready to carry out the necessary tests. The Engineer is obliged to give the Contractor an instruction to indicate which date the Contractor is to commence with the tests; failing which, the Engineer is deemed to have given a notice of no-objection and the Contractor will carry on the date notified and in accordance with its test programme.

6.2.2.18 Review test results report (Sub-Clause 9.1)

Under sub-clause 9.1 [Contractor's Obligations] the Engineer is obliged to review the certified test report submitted by the Contractor, which report is prepared by the Contractor when it believes that the works (or a section thereof) has passed the tests on completion.

The Engineer is obliged to review such report and to give the Contractor a notice to indicate the extent to which the works do not comply with the contract. Notice here again as for the programme under sub-clause 8.3 [Programme]) that the Engineer does not approve, but is required to indicate compliance to the contract.

The first result of such failure to act within 14 days (of the result of such test being submitted) is that the Engineer is deemed have given a notice of no-objection.

However, this is a gross failure of the Engineer's duties, as such this is a failure by the Engineer to fulfil this obligation means that the Engineer fails in its obligation under sub-clause 3.1 [The Engineer]: "*the Engineer, who shall carry out the duties assigned to the Engineer in the Contract*"; if the Employer considers the Engineer's failure to be of such a nature that drastic action is warranted, the Employer has the right to replace the Engineer under sub-clause 3.6 [Replacement of the Engineer].

6.2.2.19 Respond within 28 days of receipt of the Contractor's notice for taking over (Sub-Clause 10.1)

Under sub-clause 10.1 [Taking Over of the Works and Sections] (with certain exceptions), the works shall be taken over when:

"*(a) the Works have been completed in accordance with the Contract, including the passing of the Tests on Completion and except as allowed in sub-paragraph (1) below;*

(b) if applicable, the Engineer has given (or is deemed to have given) a Notice of No-objection to the as-built records submitted under Sub-Clause 4.4.2…;

(c) if applicable, the Engineer has given (or is deemed to have given) a Notice of No-objection to the operation and maintenance manuals submitted under Sub-Clause 4.4.3…;

(d) if applicable, the Contractor has carried out the training as described under Sub-Clause 4.5…;

(e) a Taking Over Certificate for the Works has been issued, or is deemed to have been issued in accordance with this Sub-Clause."

Glover & Hughes (2018) indicate that taking over of the works is a critical part of any building contract and summarise that under this FIDIC form:

- "*The Contractor ceases to be responsible for the care of the Works and responsibility passes to the Employer.*
- *Whilst the primary insurance obligation under Sub-Cl.19.2 ends upon issue of the Taking-Over Certificate, the Contractor, unlike under many contracts, must maintain some insurance for the Works until the issue of the Performance Certificate.*

- *The Contractor's rights of access to the Site are restricted as set out in Sub-Cl.11.7.*
- *The Employer no longer has the right to instruct variations under Sub-Cl.13.1 save 'for the purpose of remedying defects under Sub-Cl.11.2.*
- *An Employer's right to Delay Damages under Sub-Cl.8.8 will cease to accrue.*
- *The first part of the retention for the Contractor will become due under Sub-Cl.14.9.*
- *The Defects Notification Period begins.*
- *The legal limitation period for claims may start to run."*

The Engineer's obligation under sub-clause 10.1 [Taking Over of the Works and Sections] is to (within 28 days after receiving the Contractor's notice) either issue the taking-over certificate to the Contractor, or to reject the application by giving notice to such effect to the Contractor.

Failure by the Engineer under sub-clause 10.1 [Taking Over of the Works and Sections] (by either issuing the taking over certificate, or rejecting the Contractor's application) and importantly if all of the conditions listed in (a)-(d) (as cited above) have been fulfilled, then "*the Works or Section shall be deemed to have been completed in accordance with the Contract on the fourteenth day after the Engineer receives the Contractor's Notice of application and the Taking-Over Certificate shall be deemed to have been issued.*"

6.2.2.20 Issue the interim payment certificate (Sub-Clause 14.6.1)

Under sub-clause 14.3 [Application for Interim Payment] the Contractor is required to submit its interim payment in a form acceptable to the Engineer, submit one paper original and one electronic copy as well as show the details of the amounts the Contractor considers it is entitled to as well as a monthly progress report. Such application in summary includes for the following (listed as items *(i)* to *(ix)* under sub-clause 14.3 [Application for Interim Payment]):

i. The estimated value of the permanent works completed, and documents procured;
ii. Amounts to be added or deducted for changes in laws (sub-clause 13.6 [Adjustment for Changes in Laws]) and changes in cost (sub-clause 13.7 [Adjustment for Changes in Cost]);
iii. Amounts to be deducted for retention;
iv. Amounts to be added or deducted for the advance payment;

v. Amounts to be added or deducted for plant and materials (shipped or delivered to site);
vi. Any other amounts or additions which have become due in the contract and those under sub-clause 3.7 [Agreement or Determination];
vii. Amounts to be added for provisional sums under sub-clause 13.4 [Provisional Sums];
viii. Amounts to be added for the release of the retention money under sub-clause 14.9 [Release of Retention Money];
ix. Amounts to be deducted for the use of temporary utilities if the Employer provides such utilities under sub-clause 4.19 [Temporary Utilities]; and
x. The deduction of the gross amount certified to the previous payment certificate.

No amounts will be paid until the Employer receives the performance security and the Contractor has appointed its Contractor's representative.

The Engineer's obligation under this sub-clause 14.6.1 is to issue the interim payment certificate to the Employer within 28 days of receipt of the Contractor's statement (and supporting documents), with the Contractor also being issued with a copy of the same. Such interim payment certificate is required to state the amount the Engineer "*fairly considers to be due*" and includes for any "*additions and/or deductions which have become due under Sub-Clause 3.7…*". Accompanying the IPC is the supporting particulars where the Engineer is obliged to show the variance between the statement and the supporting documents received and its amounts certified.

Failure by the Engineer to perform its obligation to certify the works for payment gives the Contractor the right under sub-clause 16.1 [Suspension by Contractor] to suspend the work.

Figure 20 shows the typical sequence of payment events envisaged in clause 14 [Contract Price and Payment]:

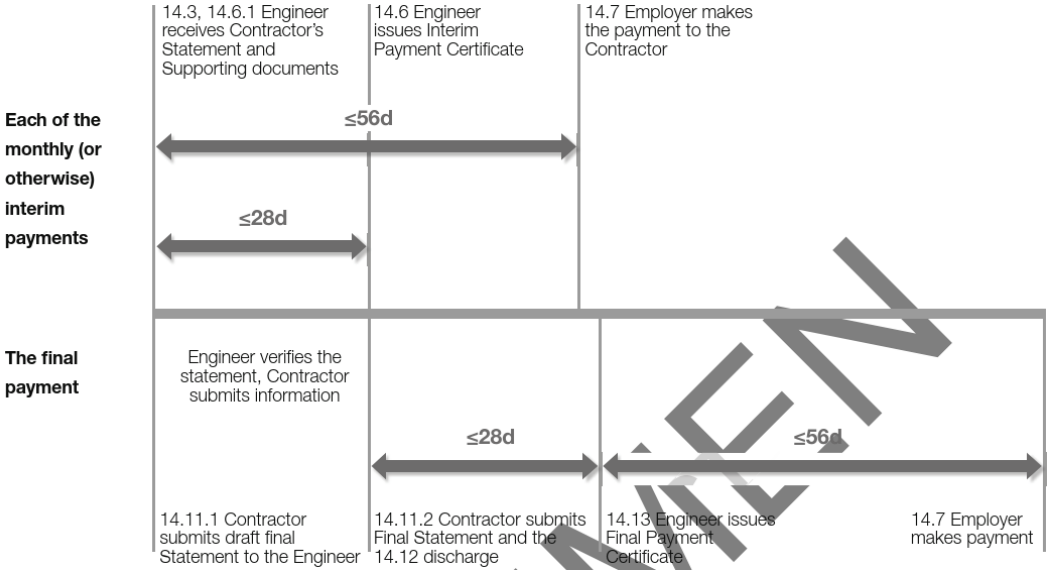


Figure 20 - FIDIC Red Book visual representation of the typical sequence of payment events envisaged in clause 14 (International Federation of Consulting Engineers (FIDIC), 2017)

6.2.2.21 Notify the Contractor of withholding amounts in an IPC (Sub-Clause 14.6.2)

Glover & Hughes (2018) indicate that the only time the Engineer may withhold the payment certificate is before the issue of the taking-over certificate of the works on the condition that it is "*an amount which would (after retention and deductions) be less than the minimum amount of the IPC (if any) stated in the Contract Data.*"

Sub-clause 14.6.2 lists the payment from (a) to (c) which may be withheld from a payment certificate, with Glover & Hughes (2018) cautioning that the withholding of amounts under (b) are (c) are subject to the appropriate notices being issued by the Engineer. Importantly, the Engineer is further required to show the details and provide the reasons for each of the amounts withheld.

Refer to 6.2.2.20 for the risk of failure by the Engineer.

6.2.2.22 Correct or modify an amount in the next payment certificate (Sub-Clause 14.6.3)

Under sub-clause 14.6.3 [Correction or modification] there is a mechanism in the contract to correct or modify any item in a future payment certificate, as a payment certificate is liquid document and cannot be revised. The contract continues to state that "*A payment certificate shall not be deemed to indicate the Engineer's acceptance, approval, consent, or Notice of No-objection to any Contractor's Document or to (any part of) the Works.*"

Glover & Hughes (2018) indicate that if the Contractor requires a correction or modification to be made by the Engineer, it is quite simple that such correction or modification is made in the payment certificate for which the Contractor submits its statement with supporting documentation, and is not automatically an item to be agreed or determined under sub-clause 3.7 [Agreement or Determination]. Only after the Engineer has already certified (or failed to) in the next payment certificate can the Contractor (if it considers that the amount certified does not include the identified amounts or if the amount is not already under agreement or determination under sub-clause 3.7 [Agreement or Determination]) give notice of its dissatisfaction and have the Engineer make its determination under sub-clause 3.7 [Agreement or Determination].

Refer to 6.2.2.20 for the risk of failure by the Engineer.

6.2.2.23 Certify the release of retention money (Sub-Clause 14.9)

Under sub-clause 1.1.69 'Retention Money' is defined as "*the accumulated retention moneys which the Employer retains under Sub-Clause 14.3…and pays under Sub-Clause 14.9…*"

As noted in 6.2.2.20 the Contractor includes in its statement for the interim payment certificate the amount to be added for the release of retention money. Under sub-clause 14.9 [Release of Retention Money] after the issue of the taking over certificate for:

"*(a) the Works, the Contractor shall include the first half of the Retention Money in a Statement; or*

(b) for a Section, the Contractor shall include the relevant percentage of the first half of the Retention Money in a Statement."

The second half of the retention moneys shall be included in the Contractor's statement after the later of the expiry dates of the DNP (also applicable to the DNP's for sections, which percentages shall be stated in the Contract Data). Following this in the next IPC the Engineer is obliged under sub-clause 14.9 [Release of Retention Money] to "*certify the release of the corresponding amount of Retention Money.*" However, the Engineer shall be entitled to withhold the release of such retention money if there remains any work to be corrected under clause 11 [Defects after Taking Over] or clause 12 [Tests after Completion].

Glover & Hughes (2018) include a reminder that no retention is withheld on changes in legislation (under sub-clause 13.6 [Adjustment for Changes in Laws]) and/or cost (under sub-clause 13.7 [Adjustment for Changes in Cost]).

A good inclusion in the FIDIC Red Book's optional special provisions is the wording to be included in the contract for the provision of a guarantee in lieu of actual cash retention being withheld, the advantage of which according to Glover & Hughes (2018) is that the Contractor won't encounter problems with the repayment of the retention money withheld.

Failure by the Engineer to certify the release of the retention money gives the Contractor the right under sub-clause 14.6.3 [Correction or modification] to include in its statement for the following IPC the amount identified. Refer to 6.2.2.22 for the risk of the Engineer's failure to meet such obligation.

6.2.2.24 Issue an IPC following the receipt of the statement at completion (Sub-Clause 14.10)

Note here that there is a difference between the statement at completion (as contemplated in clause 14.10 [Statement at Completion]) and the final statement (as contemplated in clause 14.11 [Final Statement]); that is the statement at completion is submitted by the Contractor after the date for completion, whereas the final statement is submitted after receipt of the performance certificate.

The Contractor is required to submit within 84 days of the date for completion a statement at completion with supporting documents, all in accordance with the requirements laid down for the IPC under sub-clause 14.3 [Application for Interim Payment], showing:

"*(a) the value of all work done in accordance with the Contract up to the Date for Completion of the Works;*

(b) any further sums which the Contractor considers to be due at the Date of Completion for the Works; and

(c) an estimate of any other amounts which the Contractor considers have or will become due after the Date of Completion for the Works, under the Contract or otherwise. These estimated amounts shall be shown separately…and shall include estimated amounts for:

(i) Claims for which the Contractor has submitted a Notice under Sub-Clause 20.2…;

(ii) any matter referred to the DAAB under Sub-Clause 21.4…; and

(iii) any matter for which a NOD has been given under Sub-Clause 21.4…"

The Engineer's obligation under this sub-clause is to issue an IPC under sub-clause 14.6 [Issue of IPC], as such the failure of this obligation is discussed in 6.2.2.20.

6.2.2.25 Issue the final payment certificate (Sub-Clause 14.13)

The Engineer is responsible to issue to the Employer the final payment certificate within 28 days of taking receipt of the Contractor's final statement (or partial final statement as the case may be) under sub-clause 14.11 [Final Statement] and the discharge under sub-clause 14.12 [Discharge], which final payment certificate states the gross final amount due and any balance due (if any) by taking into account the amounts previously certified.

Under sub-clause 14.13 [Issue of FPC] the Engineer is to request the Contractor to submit its application for the final payment certificate if the Contractor has failed to do so. If the Contractor fails for a further 28 days to submit such application the Engineer is obliged to prepare the final payment certificate for an amount the Engineer considers fairly to be due to the Contractor.

The Engineer's obligation under this sub-clause is to issue an IPC under sub-clause 14.6 [Issue of IPC], as such the failure of this obligation is discussed in 6.2.2.20.

6.2.2.26 Agree or determine the valuation after termination for Contractor's default (Sub-Clause 15.3)

Reference is made to sub-clause 15.2 [Termination for Contractor's Default] for the reasons the Employer has the right to terminate the contract for the Contractor's default, as well as the process to follow to effect such termination. The Employer's obligations under this sub-clause is discussed in 12.10.1.27 and 12.10.1.28.

Under sub-clause 15.3 [Valuation after Termination for Contractor's Default] the Engineer has the obligation to agree or determine under sub-clause 3.7 [Agreement or Determination] the "*value of the Permanent Works, Goods and Contractor's Documents, and any sums due to the Contractor for work executed in accordance with Contract…*" after termination of the contract under sub-clause 15.2 [Termination for Contractor's Default]. The Engineer shall consider any and all amounts previously certified under sub-clause 14.13 [Issue of IPC] and include for any additions and/or deductions and the balance due (if any). Glover & Hughes (2018) warns that such determination shall not include for any amounts for Contractor's documents, materials, plant and permanent works which are not in accordance with the contract.

Failure by the Engineer to meeting this obligation gives the Contractor the right to claim under sub-clause 20.2 [Claims for Payment and/or EOT].

Refer to 6.2.2.6 to 6.2.2.10 for the results of non-compliance by the Engineer to act on its obligation to agree or determine under sub-clause 3.7 [Agreement or Determination].

6.2.2.27 Agree or determine the valuation and loss of profit after termination for Employer's convenience (Sub-Clause 15.6)

Under sub-clause 15.5 [Termination for Employer's Convenience] the Employer enjoys the right to termination for its convenience. After termination under sub-clause 15.5 [Termination for Employer's Convenience] the Contractor is required to submit supporting particulars of the work done to date as well as any amount of profit and or loss suffered, or damages suffered as a result of the termination. The Engineer in turn is obliged to agree or determine the amounts due under sub-clause 3.7 [Agreement or Determination] and to issue a payment certificate for the amount so agreed or determined, without the Contractor needing to submit a statement.

Glover & Hughes (2018) indicate that this clause may prove to be unpopular with Employers, as the Contractor effectively has right to claim for any loss or damage suffered as a result of the termination.

Refer to 6.2.2.6 to 6.2.2.10 for the results of non-compliance by the Engineer to act on its obligation to agree or determine under sub-clause 3.7 [Agreement or Determination]. If the Engineer completely fails to fulfil its obligation to agree or determine under sub-clause 15.6 [Valuation after Termination for Employer's Convenience] the Contractor has the right lodge a dispute to the DAAB under sub-clause 21.4 [Obtaining DAAB's Decision].

6.2.2.28 Issue a payment certificate following the determination as contemplated in sub-clause 15.6 (Sub-Clause 15.6)

Refer to 6.2.2.27.

6.2.2.29 Agree or determine the value of work done as a result of termination as a result of an exceptional event (Sub-Clause 18.5)

Refer to 12.10.1.31 for a general overview of exceptional events and the Employer's obligation to give notice of such event. Under sub-clause 18.5 [Optional Termination] either party may give notice of termination of the contract if: "*the execution of substantially all the Works in progress is prevented for a continuous period of 84 days by*

reason of an Exceptional Event…or for multiple periods which total more than 140 days due to the same Exceptional Event…". The termination date shall be 7 days after the notice is received by the other party.

The Contractor is required to submit to the Engineer the value of work done (with supporting particulars), which includes items (a) – (e) as listed under sub-clause 18.5 [Optional Termination]. The Engineer in turn is obliged to agree or determine the amounts due under sub-clause 3.7 [Agreement or Determination] and to issue a payment certificate for the amount so agreed or determined, without the Contractor needing to submit a statement.

Refer to 6.2.2.6 to 6.2.2.10 for the results of non-compliance by the Engineer to act on its obligation to agree or determine under sub-clause 3.7 [Agreement or Determination]. If the Engineer completely fails to fulfil its obligation to agree or determine under sub-clause 18.5 [Optional Termination] the Contractor has the right lodge a dispute to the DAAB under sub-clause 21.4 [Obtaining DAAB's Decision].

6.2.2.30 Issue a payment certificate following the determination as contemplated in sub-clause 18.6 (Sub-Clause 18.6)

Refer to 6.2.2.29.

6.2.2.31 Respond to a claim submitted (Sub-Clause 20.2.2)

For a full discussion on the claims process under the FIDIC Red Book, refer to 12.10.1.35 to 12.10.1.42. The response to a claim submitted is discussed under 12.10.1.35, step 2.

Should the Engineer fail to give the required notice to the claiming party within the required 14-day period, under sub-clause 20.2.2 [Engineer's initial response] the "*Notice of Claim shall be deemed to be a valid notice.*" However, if the other party disagrees with the deemed acceptance of the notice of claim, that party is required to give its notice of disagreement, following which the Engineer is required to include in its determination of the claim under sub-clause 20.2.5 [Agreement or determination of the Claim] to also consider the notice of disagreement "*or why such late submission is justified (as the case may be).*"

6.2.2.32 Following 14 days non-submission of the substantiating basis of the claim notify the Contractor of expiry (Sub-Clause 20.2.4)

For a full discussion on the claims process under the FIDIC Red Book, refer to 12.10.1.35 to 12.10.1.42. The response to a claim submitted is discussed under 12.10.1.35, step 4.

Sub-clause 20.2.4 [Fully detailed Claim] (like 20.2.2) obliges the Engineer to respond to such failure within 14 days of the lapsing period, failing which the original notice stands and the Employer may submit the claim. The other party may in such a case give notice of its disagreement for the Engineer to consider. If the event or circumstance giving rise to the claim is of a continuing effect, sub-clause 20.2.6 [Claims of continuing effect] applies.

6.2.2.33 Agree or determine the fully substantiated claim submitted (Sub-Clause 20.2.5)

For a full discussion on the claims process under the FIDIC Red Book, refer to 12.10.1.35 to 12.10.1.42. The response to a claim submitted is discussed under 12.10.1.35, step 5.

Refer to 6.2.2.6 to 6.2.2.10 for the results of non-compliance by the Engineer to act on its obligation to agree or determine under sub-clause 3.7 [Agreement or Determination]. If the Engineer completely fails to agree or determine the matter the claiming party is within its rights to refer the matter as a dispute to the DAAB under sub-clause 21.4 [Obtaining a DAAB's decision].

6.2.2.34 Respond on the contractual or other legal basis of a continuing claim submitted (Sub-Clause 20.2.6)

For a full discussion on the claims process under the FIDIC Red Book, refer to 12.10.1.35 to 12.10.1.42. The response to a claim submitted is discussed under 12.10.1.35, step 4(b).

Refer to 6.2.2.6 to 6.2.2.10 for the results of non-compliance by the Engineer to act on its obligation to agree or determine under sub-clause 3.7 [Agreement or Determination]. If the Engineer completely fails to agree or determine the matter the claiming party is within its rights to refer the matter as a dispute to the DAAB under sub-clause 21.4 [Obtaining a DAAB's decision].

6.2.2.35 Include in each payment certificate amounts for any claim as may have been reasonably substantiated (Sub-Clause 20.2.7)

The requirement for the Engineer under sub-clause 20.2.7 [General requirements] is to include in each payment certificate amounts for any claims as may have been reasonably substantiated (be it for a deduction in favour of the Employer or an additional amount in favour of the Contractor). To my own understanding this means that the agreement or determination (as the case may be) may not have been concluded, but the Engineer is

nevertheless required to certify for payment such amounts that have been "*reasonably substantiated as due under the relevant provision of the Contract.*"

As is discussed under 6.2.2.20, failure by the Engineer to perform its obligation to certify the works for payment gives the Contractor the right under sub-clause 16.1 [Suspension by Contractor] to suspend the work.

6.2.2.36 Include in the IPC the amount deducted for the payment of the DAAB when not paid for by the Contractor (Sub-Clause 21.2)

Refer to 6.2.2.20.

6.2.3 Risks during construction

As has been stated in 4.2.3 - Risks during construction, the remaining construction related risks are limited, for the purpose of this report, as: Health and Safety, Environment and Quality.

6.2.3.1 Health and Safety

Under sub-clause 4.1 [Contractor's General Obligations] the Contractor is stated to be responsible amongst other things for the "*…safety of all the Contractor's operations and activities…*"

Under sub-clause 4.8 [Health and Safety Obligations] the Contractor has several obligations related to safety, these are to:

"*(a) comply with all applicable health and safety regulations and Laws;*
(b) comply with all applicable health and safety obligations specified in the Contract;
(c) comply with all directives issued by the Contractor's health and safety officer (appointed under Sub-Clause 6.7 [Health and Safety Personnel]);
(d) take care of health and safety of all persons entitled to be on the Site and other places (if any) where the Works are being executed;
(e)-(g)…"

According to Glover & Hughes (2018) the 2017 version of the Red Book has substantially increased the magnitude of the health and safety provisions in the contract, which is in keeping with increasing safety legislation worldwide. A significant change from the 1999 version of the Red Book to the 2017 version is that the 1999 version did not require the Contractor to comply with any safety related obligations prescribed in the

contract (as the 2017 version now does), but instead only required the contractor to comply with safety related regulations.

The sub-clause 4.8 goes further to require the Contractor to submit to the Engineer the health and safety manual "*which has been specifically prepared for the Works*" within 21 days of the commencement date, but crucially also before any work commences on site.

The contract goes further by giving the Contractor the right to give notice to the Engineer if it considers an instruction given under sub-clause 3.5 which will "…*reduce the safety of the Works…*".

Under sub-clause 4.8 [Health and Safety Obligations], the health and safety manual shall set out all the health and safety requirements:

"*(i) stated in the Specification;*

(ii) that comply with the Contractor's health and safety obligations under the Contract; and

(iii) that are necessary to effect and maintain a healthy and safe working environment for all persons entitled to be on the Site…where the Works are being executed."

The contract goes further to state that the Contractor or his health and safety officer shall revise as necessary the manual, report on health and safety as required under sub-clause 4.20 [Progress Reports] and maintain records as well as make reports concerning health and safety.

The contract goes further in sub-clause 6.4 [Labour Laws] to state that the Contractor "*shall comply with all relevant labour Laws…including Laws relating to…health, safety…*" and "*The Contractor shall require the Contractor's Personnel to obey all applicable Laws, including those concerning health and safety at work.*"

Under sub-clause 6.7 [Health and Safety of Personnel] the contract states the requirements which are in addition to those contained in sub-clause 4.8 [Health and Safety Obligations], with the core of it being that the Contractor shall "*at all times take all necessary precautions to maintain the health and safety of the Contractor's Personnel…*", with the requirement being that the Contractor shall appoint a health and safety officer at the Site to "*maintain health, safety and protection against accidents*". The requirements under this sub-clause is for the health and safety officer to:

"*(i) be qualified, experienced and competent for this responsibility; and*

(ii) have the authority to issue directives for the purpose of maintaining the health and safety of all personnel authorised to enter and/or work on the Site and to take protective measures to prevent accidents."

Glover & Hughes (2018) confirms the authority the health and safety officer enjoys by confirming that the Contractor is obliged to comply with directives issued by the health and safety officer for the "*purpose of maintaining health and safety and to take protective measures to protect accidents.*"

In addition to the Contractor's rights and obligations related to health and safety, the Engineer has the right under sub-clause 6.9 [Contractor's Personnel] to require the Contractor to remove any person employed on the site which "*persists in any conduct which is prejudicial to safety, health, or the protection of the environment…*".

From the above it is evident that the FIDIC Red Book 2017 certainly goes a long way to ensure (from a contractual point of view) the health and safety of the parties, their personnel as well as any other person which may enter the site. The health and safety of all and sundry is largely the responsibility of the Contractor, with the health and safety officer having significant obligations to maintain the same, as well as the authority to issue directives to maintain it.

6.2.3.2 Environment

Under sub-clause 4.18 [Protection of the Environment] provision is made for the Contractor to take all necessary measures to:

"*(a) protect the Environment (both on and off the Site);*
(b) comply with the environmental impact statement for the Works (if any); and
(c) limit damage and nuisance to people and property resulting from pollution, noise and other results of the Contractor's operations and/or activities."

According to Glover & Hughes (2018) the obligation under this sub-clause "*is a simple yet wide ranging…*", as the obligation to protect the environment extends beyond the confines of the site to off site, as is not for the reasonable protection, but instead for the necessary measures to protect the environment – whey they go on to indicate is not defined, as such there may be difficulty to determine what the extent of such protection may be.

Glover & Hughes (2018) argues that the second portion of sub-clause 4.18 [Protection of the Environment] is more specific in what is required of the Contractor, as it requires the Contractor to comply with the specification and other requirements set out in the contract,

as these should set out "limits for emissions, surface discharges and effluent", if no such limits are described in the specification, they advise the Contractor to make enquiry during the tender period as to what these limits are. Additionally, the sub-clause provides that these values may not exceed "*those prescribed by applicable Laws*", where Glover & Hughes (2018) continues to add that these requirements may in fact be more stringent than those in the specification. In closing, the Guidance to the Special Provisions are clear that the Engineer is obliged to determine under the applicable environmental law whether the Contractor is required to submit project-specific environmental plans for review by the Engineer and ultimately approval by the required regulatory authority; with such requirements being clearly stated in the specification.

Under sub-clause 15.1 [Notice to Correct] if the Contractor "*fails to carry out any obligation under the Contract*" the Engineer "*may by giving notice to the Contractor, require the Contractor to make good the failure and to remedy it within a specified time*", as such if the Contractor does not comply with its obligations under sub-clause 4.18 [Protection of the Environment], the Engineer can give such notice to correct. Under sub-clause 15.2 [Termination for Contractor's Default] the Employer is entitled to give a notice to the Contractor if it fails to comply with the above notice to correct.

6.2.3.3 Quality

There lies risk to the Employer that the end product it envisioned may not be delivered at the quality expected, especially if the specifications are onerous; however in saying that the Employer has remedies in terms of the contract whereby the Contractor is obliged to prepare and implement a quality management system as part of its duty to execute the works in terms of sub-clause 4.9.1 [Quality Management System]. Accordingly, the specification is required to specify what the Employer's quality requirements and standards are, with those standards stated in the specification being the baseline against which Defects (refer to sub-clause 7.5 [Defects and Rejection]) are measured by.

To this end the Contractor is required to prepare an implement a Quality Management System (QM System) in terms sub-clause 4.9.1 and those requirements stated in the specification (if so required by the Employer) "*to demonstrate compliance with the requirements of the Contract*". Such QM System is prepared specifically for the project and is required to be submitted to the Engineer within 28 days of the commencement date. According to sub-clause 4.9.1 the purpose of the QM System is threefold:

"*(a) to ensure that all Notices and other communications under Sub-Clause 1.3…, Contractor's Documents, as-built records (if applicable), operation and maintenance manuals (if applicable), and contemporary records can be traced, with full certainty, to the Works, Goods, work, workmanship, or test to which they relate;*

(b) to ensure proper coordination and management of interfaces between the stages of execution of the Works, and between Subcontractors; and

(c) for the submission of Contractor's Documents to the Engineer for Review."

The Engineer is not obliged to review the QM System, however under sub-clause 4.9.1 the Engineer may review the same and "*give Notice to the Contractor to the extent to which it does not comply to the Contract*", failing such notice, the Engineer is deemed to have given a "*Notice of No-objection*".

In terms of sub-clause 11.4 [Failure to Remedy Defects] the Employer can have the work related to correction of defects carried out by others (at the Contractor's cost); accept the damaged or defective work (with an associated reduction in contract price); require the Engineer to treat such work as an omission to the Contract if the Works cannot be used for its intended purpose; and lastly to terminate the Contract (only if the "*defect or damage deprives the Employer of substantially the whole benefit of the Works*") in which case the Employer can submit a claim against the Contractor under sub-clause 20.2 [Claims for Payment and/or EOT].

6.3 FIDIC Red Book 2017 conclusion

On review of this form of contract I hold that there are many good practice project management principles which have been incorporated in to this version of the FIDIC Red Book, however the contract has certainly become onerous in the magnitude of obligations placed on all of the parties, be it the Employer, the Contractor or the Engineer. As such, the Employer needs to be a very mature client and have excellent corporate governance processes in place in order to ensure that the Engineer is contracted and paid for during the early design stages of the project, as well as to ensure that the Engineer prepares an excellent tender and specification document, as so much of any project under this form of contract's success is determined by the quality of information as well as the completeness of the specification. It is likely that the Parties may become bogged down with administering the contract (owing to its heavy administrative burden and high number of obligations on all) instead of being able to focus on delivering the Works.

On the face value of it, the FIDIC had good intentions in bringing more project management principles into the contract (like the NEC suite of contracts), however these project management requirements are unfortunately tied down with a very legalistic form of contracting and could be the undoing of its uptake in the marketplace. The sheer number of obligations placed on the Employer is beyond what most employers are likely to be comfortable to wish to enjoy in a contract; additionally, the Engineer in turn is highly likely to heavily burdened with the administration of the contract, owing to the large number of obligations, as well as deeming provisions. In saying that the FIDIC 2017 Red Book assigns symmetrical rights and obligations between the Parties, with provision being made for collaboration. The change in the DAB from the 1999 version to be a DAAB in the 2017 version is a likely to be a good change, as this change occasions the avoidance of disputes from a contractual point of view, unfortunately the biggest threat to this novel change is the parties, as they need to be mature enough to have the will to engage in the avoidance of disputes, instead of declaring disputes as a first port of call.

7 RESULTS

The research report aimed to analyse and compare three different standard form construction contracts with each other, with specific reference to the adoption of risk by the Employer owing to its actions, its project manager's actions as well as general construction risks. Following from the above, the below results aim to inform Employers as to what risks they adopt in terms the JBCC PBA 6.2, NEC4 ECC Option B and FIDIC Red Book 2017 forms of contract with specific reference to the quantum and type of risks in a tabular and graphical format; in order for these Employers to manage or transfer those risks based on those Employers' risk profiles.

Based on the research outcomes for each of the standard form contracts, the common non-performance risks found are: time, cost, time and cost, suspension, dispute, termination, deemed acceptance, deemed rejection, no recourse stated and other related categories.

7.1 Overall results

7.1.1 Comparison of quantum of mandatory obligations

The below Figure 21 summary comparison does not discriminate with regards to the importance of mandatory obligations, but only relates to the quantum of mandatory obligations, with separate information being shown for the Employer and PA/PM/Engineer:

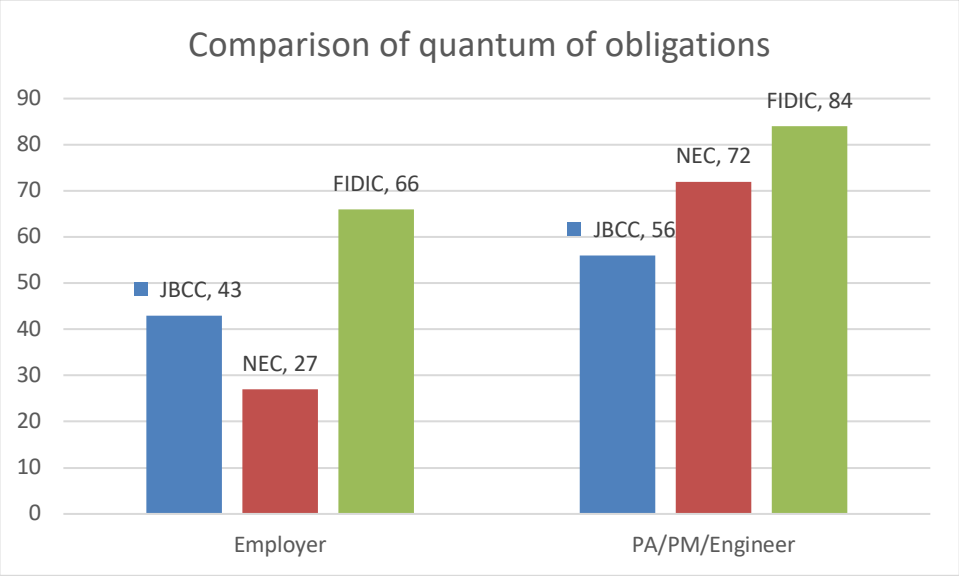


Figure 21 - Comparison of quantum of mandatory obligations

Based on the results presented in Figure 21, the following conclusions are reached:

i. Of the three standard form construction contracts, the NEC4 ECC requires by some margin the least direct input from the Employer by way of mandatory obligations, thus resulting in lower overall risk count, but not necessarily lower risk profile;
ii. Of the three standard form construction contracts, the FIDIC Red Book 2017 requires its main agent to perform the most possible mandatory obligations through the life of the contract, however in stating that the NEC4 ECC also has many mandatory obligations which the main agent must perform. Of the three standard form contracts, the JBCC PBA 6.2 has the least number of mandatory obligations to perform.
iii. Under the JBCC PBA 6.2 the Employer has 43 obligations which it must perform, if it does not wish for any number or recourses in the contract to take place. In comparison, the Principal Agent is required to perform a possible 56 mandatory contractual obligations through the life of a contract;
iv. Under the NEC4 ECC the Employer has 27 obligations which it must perform, if it does not wish for any number or recourses in the contract to take place. In comparison, the Project Manager is required to perform a possible 72 mandatory contractual obligations through the life of a contract;
v. Under the FIDIC Red Book 2017 the Employer has 66 obligations which it must perform, if it does not wish for any number or recourses in the contract to take place. In comparison, the Project Manager is required to perform a possible 84 mandatory contractual obligations through the life of a contract.

7.1.2 Qualitative results

Based on the critical analysis of each of the contracts, the following is a presentation of the qualitative results pertaining to the risks adopted by the Employer and its main agent.

The risks related to non-performance of mandatory obligations were divided into 10 categories, based on the results from the critical analysis, those being:

i. Time;
ii. Cost;
iii. Time and cost;
iv. Suspension;
v. Dispute;
vi. Termination;
vii. Deemed acceptance;

viii. Deemed rejection;

ix. No recourse stated in the contract;

x. Other (which included for a wide variety of results, which are shown in the below tables),

7.1.2.1 JBCC PBA 6.2 qualitative results

Under the JBCC PBA 6.2 the Employer has 43 mandatory obligations to which risks of non-performance are related, the detail of which is covered in the critical analysis for this contract.

Employer:

The below Table 20 shows the 10 risk categories related to each of the applicable mandatory obligation clauses under the JBCC PBA 6.2.

Table 20 - JBCC PBA 6.2 qualitative results for Employer's mandatory obligations

Clause	Time	Cost	Time and cost	Suspension	Dispute	Termination	Deemed acceptance	Deemed rejection	No recourse stated	Other	Comment
2.1										1	
2.2										1	
3.4										1	
5.2					1						
5.3										1	Agent has no authority and not part of project
6.5						1					
6.6					1						
8.1		1									
10.1				1							
10.2				1							
10.3				1							
10.7										1	Employer could lose the proceeds to an insurance claim
10.9		1									
11.5.1				1		1					
11.5.2				1		1					
11.7				1		1					
11.8										1	No recourse stated in the contract
11.9						1					
12.1.2										1	Dispute between Employer and occupant of premises
12.1.3			1								
12.1.4			1								
12.1.5			1			1					
12.1.10			1								

Clause	Time	Cost	Time and cost	Suspension	Dispute	Termination	Deemed acceptance	Deemed rejection	No recourse stated	Other	Comment
12.1.11			1								
12.1.12			1								
14.7.1			1								
15.7.1						1					
19.7	1										Late completion of the remainder of the project
25.1			1	1		1				1	Can also call on the payment guarantee
25.17						1					
29.2										1	Cannot terminate if no notice is issued
29.7										1	Loses right to recover cost
29.9										1	Loses right to recover cost
29.21										1	Delays the termination date
29.21.2										1	Inadequate insurance cover
29.27										1	Inadequate insurance cover
30.3										1	Shall cause the dispute to be resolved by arbitration i.l.o. adjudication
30.4										1	Shall cause the dispute to be resolved by arbitration i.l.o. adjudication
30.7.5										1	Arbitrator decides the rules for arbitration
30.8.1										1	Mediator ultimately terminates mediation proceedings
30.8.2					1						
30.8.3										1	No recourse if not borne, other than indebtedness to mediator
30.11					1						A dispute is likely if the Employer does not continue to perform its obligations
	1	**2**	**8**	**7**	**4**	**9**	**0**	**0**	**0**	**19**	

Principal Agent:

Under the JBCC PBA 6.2 the Principal Agent has 56 mandatory obligations to which risks of non-performance are related, the detail of which is covered in the critical analysis for this contract.

The below Table 21 shows the 10 risk categories related to each of the applicable mandatory obligation clauses under the JBCC PBA 6.2.

Table 21 - JBCC PBA 6.2 qualitative results for Principal Agent's mandatory obligations

Clause	Time	Cost	Time and cost	Suspension	Dispute	Termination	Deemed acceptance	Deemed rejection	No recourse stated	Other	Comment
5.2										1	Contract is silent on recourse for non-action
5.2										1	Contract is silent on recourse for non-action
5.6			1								
6.2										1	Delegation of no force, as Contractor is not informed
6.3				1							
8.6					1						
11.3										1	PI Claim against Principal Agent (outside of the contract)
12.2.6										1	PI Claim against Principal Agent (outside of the contract)
12.3										1	PI Claim against Principal Agent (outside of the contract)
12.3										1	Action outside the contract between the parties
13.1.1			1								
13.1.2			1								
13.2.4					1						
14.1.1			1								
14.1.2			1								
14.1.3			1								
14.1.4			1								
14.5	1										
14.6	1										
15.1.1			1								
15.1.2			1								
15.1.3			1								
15.1.4			1								
15.5	1										
15.7.3	1										
19.1.1			1								
19.3										1	Deemed issuance of Practical Completion after some time
20.2										1	Deemed issuance of Practical Completion after some time
21.4										1	Possible shorter Defects Liability Cover period
21.5										1	Possible shorter Defects Liability Cover period

Clause	Time	Cost	Time and cost	Suspension	Dispute	Termination	Deemed acceptance	Deemed rejection	No recourse stated	Other	Comment
21.6										1	Possible shorter Defects Liability Cover period
21.7.3										1	Possible shorter Defects Liability Cover period
21.8										1	Contractor achieves deemed final completion
23.7										1	Deemed refusal of the claim submitted
24.2										1	PI Claim against Principal Agent (outside of the contract)
24.3										1	PI Claim against Principal Agent (outside of the contract)
25.1										1	PI Claim against Principal Agent (outside of the contract)
25.1					1						
25.2						1					
25.7				1							
25.9						1				1	Call for a new Principal Agent
25.15						1				1	Call for a new Principal Agent
25.16					1	1					
26.1					1						
26.3					1						
26.7					1						
26.7					1						
26.9					1						
26.1					1						
26.13						1					
27.1					1						
28.4					1						
28.4					1						
29.2										1	Possible PI claim against Principal Agent by the Employer
29.24.3										1	Goods remain the property of the Employer
29.25					1						
Total	**4**	**0**	**12**	**2**	**14**	**5**	**0**	**0**	**0**	**22**	

Overall comparison:

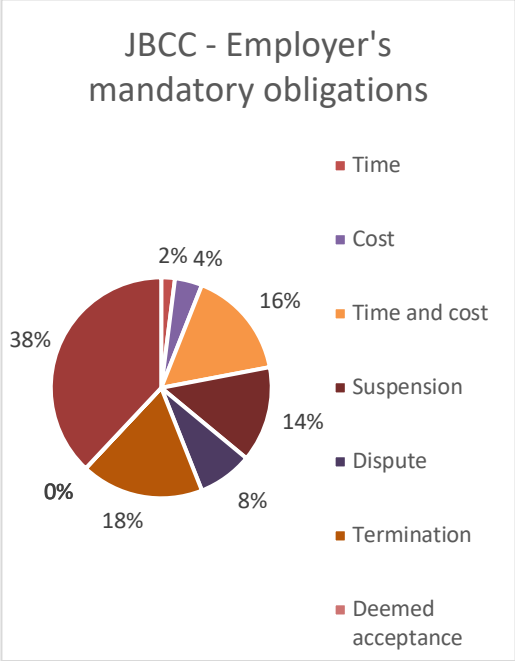


Figure 22 - JBCC PBA 6.2 summary of Employer's mandatory obligations' risks

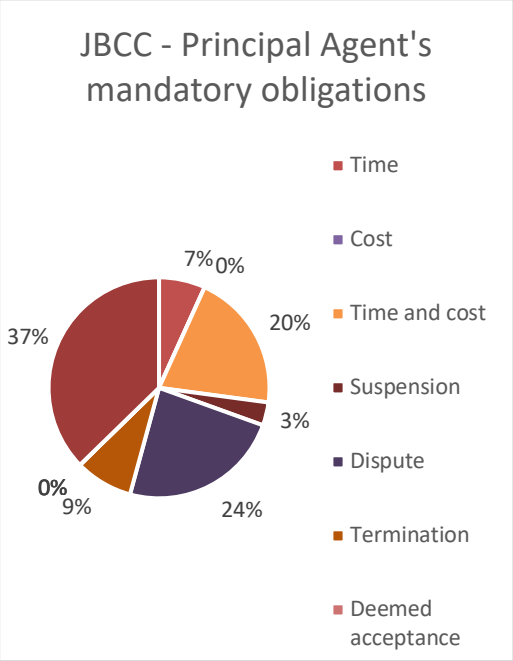


Figure 23 - JBCC PBA 6.2 summary of Principal Agent's mandatory obligations' risks

The results presented in the above Table 20, show that when presented in a percentage of risks (as shown in Figure 22) that of the 43 mandatory obligations which the Employer must perform under the JBCC PBA 6.2, a large number result in either additional time and cost (16%), suspension of the contract (14%), termination (18%), while "other" accounts for 38% of the results of non-performance.

Of the 56 mandatory obligations which the Principal Agent must perform under the JBCC PBA 6.2, Figure 23 shows a large number result in either additional time and cost (20%), dispute (24%), while "other" accounts for 37% of the results of non-performance.

What is of interest here is that the results of non-action by the Principal Agent when compared to the Employer shows that dispute is far more likely when the Principal Agent does not perform its tasks when compared to the Engineer. However, in the case of the Employer, the likelihood of termination for non-performance of mandatory obligations is far higher than for the Principal Agent.

7.1.2.2 NEC4 ECC qualitative results

Under the NEC4 ECC the Employer has 27 mandatory obligations to which risks of non-performance are related, the detail of which is covered in the critical analysis for this contract.

Employer:

The below Table 22 shows the 10 risk categories related to each of the applicable mandatory obligation clauses under the NEC4 ECC.

Table 22 - NEC4 ECC qualitative results for Employer's mandatory obligations

Clause	Time	Cost	Time and cost (Compensation Event)	Suspension	Dispute	Termination	Deemed acceptance	Deemed rejection	No recourse stated	Other	Comment
10.1			1	1	1	1					
10.2			1	1	1	1					
13.1										1	
13.7										1	
25.2										1	
33.1			1								
35.1										1	
41.2			1								
51.1										1	
80.1										1	
82.2					1						
83.1		1									Contractor takes out the insurance at the cost of the Employer
84.2		1									Contractor takes out the insurance at the cost of the Employer
84.3		1									A breach in this regard means that the party in breach is at risk for the cost
86.3		1									
90.2					1						
W1.2 (1)					1						Litigation
W1.2 (3)					1						Litigation
W1.3 (3)										1	Disadvantage in the dispute
W1.3 (5)										1	Disadvantage in the dispute
W1.3 (5)										1	Disadvantage in the dispute
W1.3 (6)										1	Disadvantage in the dispute

Clause	Time	Cost	Time and cost (Compensation Event)	Suspension	Dispute	Termination	Deemed acceptance	Deemed rejection	No recourse stated	Other	Comment
W1.3 (9)					1						Refer the dispute to the Tribunal
W1.4 (1)									1		Procedural rule
W1.4 (6)									1		Procedural rule
X7.2		1			1						
X14.1			1								
Total	**0**	**5**	**5**	**2**	**8**	**2**	**0**	**0**	**2**	**10**	

Project Manager:

Under the NEC4 ECC the Project Manager has 72 mandatory obligations to which risks of non-performance are related, the detail of which is covered in the critical analysis for this contract.

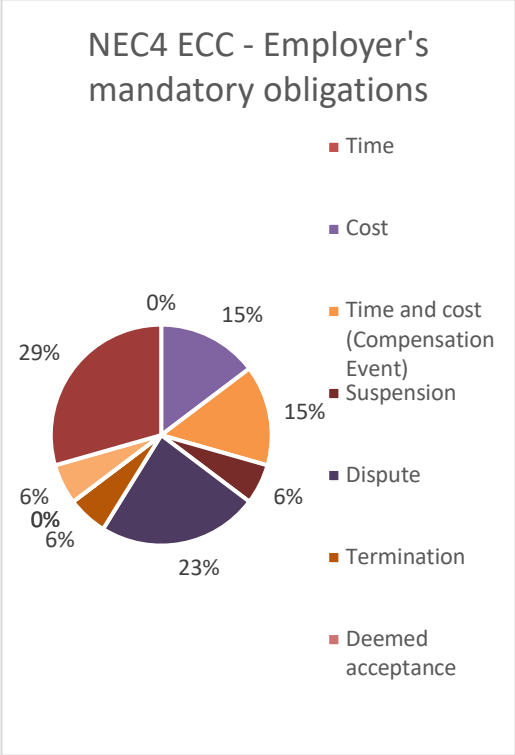
The below Table 23 shows the 10 risk categories related to each of the applicable mandatory obligation clauses under the NEC4 ECC.

Table 23 - NEC4 ECC qualitative results for Project Manager's mandatory obligations

Clause	Time	Cost	Time and cost (Compensation Event)	Suspension	Dispute	Termination	Deemed acceptance	Deemed rejection	No recourse stated	Other	Comment
10.1			1	1	1	1					Dependent on each obligation in the contract
10.2			1	1	1	1					Dependent on each obligation in the contract
13.1										1	
13.3			1								
13.4			1	1	1	1					Dependent on each obligation in the contract
13.4			1								
13.6			1								
13.7			1	1	1	1					Dependent on each obligation in the contract
15.1			1								
15.2			1								
15.3			1								
15.4			1								
15.4			1								
16.1										1	
16.2										1	
16.3			1								
17.1			1								
17.1			1								
17.2			1		1						
19.1			1			1					
21.2			1								
23.1										1	CE against the PM under its own contract
23.1			1								
24.1			1								
25.2										1	
25.3										1	
25.3										1	
26.2			1								
26.3			1								
27.2										1	The contract does not have any remedy if the Project Manager does not name Others
30.2										1	
30.2			1		1						

Clause	Time	Cost	Time and cost (Compensation Event)	Suspension	Dispute	Termination	Deemed acceptance	Deemed rejection	No recourse stated	Other	Comment
31.3			1								
35.3			1		1						
36.3			1								
40.2			1		1						
41.6					1						
44.4										1	No correction of defect
45.2										1	No correction of defect
46.1										1	No correction of defect
46.2			1								
50.1						1					
50.4						1					
50.5									1		
50.6		1									
51.1						1					
60.6					1						
61.1			1								
61.4			1								
61.4			1								
61.5			1								
61.7											No risk
62.1									1		
62.3			1								
62.4			1								
62.5					1						
63.11					1						
64.1										1	
64.2			1				1				Deemed acceptance of the Compensation Event
64.3			1				1				Deemed acceptance of the Compensation Event
73.1					1						
84.1										1	
86.1		1									
90.1										1	Replacement of Project Manager
90.3										1	Replacement of Project Manager
91.2										1	Employer waives right to terminate
91.2										1	Employer waives right to terminate
91.3										1	Employer loses right to terminate
91.3										1	Employer loses right to terminate
W1.3(2)										1	
W1.3(9)										1	
X7.3					1						
X13.1			1								
X14.2			1								
Total	**0**	**2**	**38**	**4**	**14**	**8**	**2**	**0**	**2**	**22**	

Overall comparison:



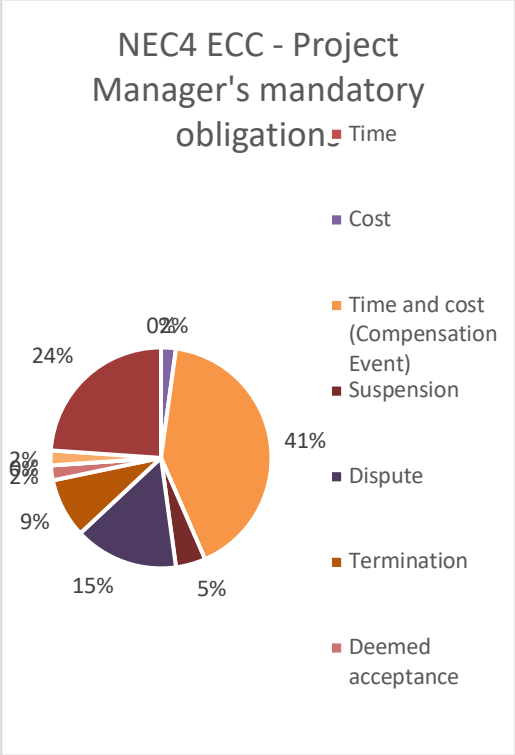


Figure 24 - NEC4 ECC summary of Employer's mandatory obligations' risks

Figure 25 - NEC4 ECC summary of Project Manager's mandatory obligations' risks

Of the 27 mandatory obligations which the Employer is required to perform under the NEC4 ECC, Figure 24 shows a large number result in either additional cost (15%), time and or cost (compensation event) (15%), dispute (23%), while "other" accounts for 29% of the results of non-performance.

Of the 72 mandatory obligations which the Project Manager must perform under the NEC4 ECC, Figure 25 shows a large number result in either additional time and or cost (compensation events) (41%), dispute (15%), while "other" accounts for 24% of the results of non-performance.

Although the results are not entirely similar, there is no significant increase in the severity (when thinking of suspension and termination) of the result of non-performance when comparing the Employer's mandatory obligations with those of the Project Manager. This is likely to prove the point that the NEC makes that their contract serves as a stimulus for good management (Eggleston, 2006), (Evans, 2017) and (Mason, 2016).

7.1.2.3 FIDIC 2017 Red Book qualitative results

Under the FIDIC 2017 Red Book the Employer has 66 mandatory obligations to which risks of non-performance are related, the detail of which is covered in the critical analysis for this contract.

Employer:

The below Table 24 shows the 10 risk categories related to each of the applicable mandatory obligation clauses under the FIDIC 2017 Red Book.

Table 24 - FIDIC 2017 Red Book qualitative results for Employer's mandatory obligations

Clause	Time	Cost	Time and cost	Suspension	Dispute	Termination	Deemed acceptance	Deemed rejection	No recourse stated	Other	Comment
1.3									1		Nothing happens
1.5									1		Nothing happens
1.6						1					
1.8			1								
1.8			1								
1.8									1		No recourse stated in the contract
1.12									1		No recourse stated in the contract
1.13										1	No result stated in report
1.13			1								
2.1			1								
2.2	1										
2.3	1										
2.4						1					
2.4						1					
2.4						1					
2.5			1								
3.1										1	Contract cannot function
3.2					1						
3.6										1	Loses the right to replace the Engineer
3.7.4										1	Determination stands as is
4.2			1								
4.2.3									1		Procedural rule / no remedy stated in contract
6.3									1		Procedural rule / no remedy stated in contract
7.3 a										1	Possible occurrence of defects
7.3 b										1	Possible occurrence of defects
7.3 c										1	Possible occurrence of defects
7.3 c										1	Possible occurrence of defects

Clause	Time	Cost	Time and cost	Suspension	Dispute	Termination	Deemed acceptance	Deemed rejection	No recourse stated	Other	Comment
8.3									1		Procedural rule / no remedy stated in contract
8.4					1						
10.1			1							1	Employer's risk
11.1			1						1		Loses rights in terms of the contract
11.4			1						1		Loses rights in terms of the contract
11.7			1						1		Loses rights in terms of the contract
14.2			1	1	1	1					
14.2.1			1	1	1	1					
14..7			1	1	1	1					
15.2.1									1		Loses rights in terms of the contract
15.2.4									1		No specific recourse stated
15.5	1	1									Loses rights in terms of the contract, resulting in potential additional time and cost
15.7					1						Probable litigation
16.4		1									
17.1		1									Potential loss suffered
18.2			1	1	1	1					
18.3			1	1	1	1					
18.6 ii		1									
19.1										1	Contractor takes insurance through insurer stated in tender submitted
19.1					1						
20.2.1			1					1			Loses the right to claim
20.2.2			1					1			Loses the right to claim
20.2.2			1					1			Loses the right to claim
20.2.3			1					1			Loses the right to claim
20.2.4			1					1			Loses the right to claim
20.2.5 iii			1					1			Loses the right to claim
20.2.6			1					1			Loses the right to claim
20.2.6 c			1					1			Loses the right to claim
21.1										1	Appointing entity appoints DAAB
21.1										1	Appointing entity appoints DAAB
21.1										1	Appointing entity appoints DAAB
21.1										1	Arbitrator considers cost
21.2										1	Arbitrator considers cost
21.3					1						
21.4.2			1							1	Negatively affects its own cause
21.4.3					1						

Clause	Time	Cost	Time and cost	Suspension	Dispute	Termination	Deemed acceptance	Deemed rejection	No recourse stated	Other	Comment
21.4.4								1			Loses entitlement to arbitration
21.4.5					1						
21.6					1						Litigation
Total	**3**	**4**	**24**	**5**	**13**	**9**	**0**	**9**	**12**	**16**	

The Engineer:

Under the FIDIC 2017 Red Book the Engineer has 84 mandatory obligations to which risks of non-performance are related, the detail of which is covered in the critical analysis for this contract.

The below Table 25 shows the 10 risk categories related to each of the applicable mandatory obligation clauses under the FIDIC 2017 Red Book.

Table 25 - FIDIC 2017 Red Book qualitative results for the Engineer's mandatory obligations

Clause	Time	Cost	Time and cost	Suspension	Dispute	Termination	Deemed acceptance	Deemed rejection	No recourse stated	Other	Comment
1.3									1		
1.3									1		
1.5										1	Possible replacement of the Engineer
1.8										1	Possible replacement of the Engineer
1.12										1	Possible replacement of the Engineer
2.4										1	Possible replacement of the Engineer
2.5	1	1	1								
3.1										1	Possible replacement of the Engineer
3.2										1	Possible replacement of the Engineer
3.3										1	Possible replacement of the Engineer
3.5								1			Revokes instruction issued
3.7										1	
3.7.1					1						
3.7.2										1	
3.7.3				1	1	1					
3.7.4				1	1	1					
3.8									1		Nothing stated, possible replacement of the Engineer
4.3							1				Deemed to have given consent
4.4.1							1				Deemed to have given notice of no objection
4.7.3				1	1	1					
4.12.2	1	1	1								
4.17											
4.19							1				Deemed acceptance?
4.22							1				Deemed acceptance?
4.23	1	1	1								

Clause	Time	Cost	Time and cost	Suspension	Dispute	Termination	Deemed acceptance	Deemed rejection	No recourse stated	Other	Comment
5.1							1				Deemed to have given consent
5.2.1										1	Contractor appoints subcontractor to its own approval
5.2.4		1									
6.3									1		No recourse stated - dispute?
6.5								1			Deemed rejection
6.1								1			Deemed rejection
6.12							1				Deemed to have given consent
7.2							1				Deemed to have given consent
7.3							1				Deemed to have given consent
7.4							1				Deemed to have given consent / Engineer deemed to be present
7.5							1				Defective material used and accepted
8.1						1					
8.3							1				Deemed to have given consent / no-objection
8.4					1						
8.5					1						
8.13							1				Deemed acceptance?
9.1							1				Deemed to have given consent / no-objection
9.1							1				Deemed to have given consent / no-objection
9.2					1						
10.1							1				Deemed to have given consent / no-objection
10.3							1				Deemed to have given consent / no-objection
11.2				1	1	1					
11.6							1				Deemed acceptance?
11.9							1				Deemed to have given consent / no-objection
12.1					1						
12.1					1						
12.1					1						
12.3					1						
12.3					1						
13.1	1	1			1						
13.2	1	1			1						
13.3.1				1	1	1					

Clause	Time	Cost	Time and cost	Suspension	Dispute	Termination	Deemed acceptance	Deemed rejection	No recourse stated	Other	Comment
13.3.2		1									
13.4							1				Deemed to have given consent / no-objection
13.5					1						
13.5					1						
13.6 (ii)					1						
13.6 (ii)					1						
13.7		1									
14.2.2		1									
14.5				1	1	1					
14.6.1				1							
14.6.2				1							
14.6.3				1							
14.9				1							
14.1				1							
14.11.1							1				Deemed to have given consent / no-objection
14.13					1						
15.3					1						Litigation
15.6					1						Litigation
15.6					1						Litigation
18.5					1						Litigation
18.6					1						Litigation
20.2.2							1				Deemed to have given consent / no-objection
20.2.4							1				Deemed to have given consent / no-objection
20.2.5					1						
20.2.6					1						
20.2.7				1							
21.2				1							
Total	**5**	**9**	**3**	**13**	**29**	**7**	**22**	**3**	**4**	**10**	

Overall comparison:

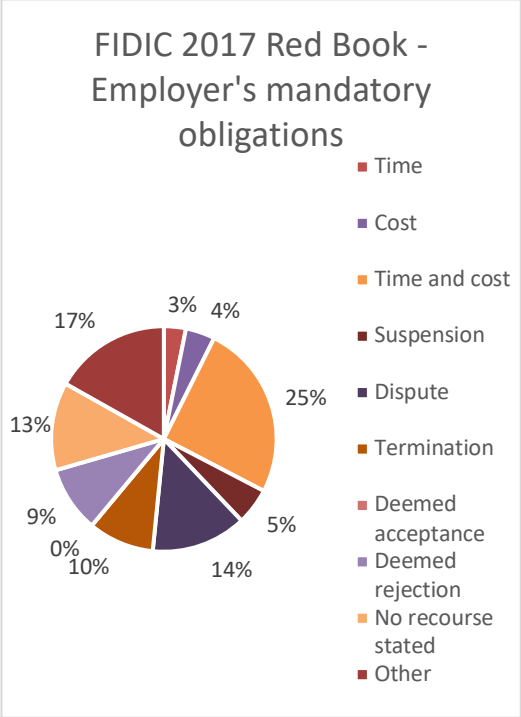


Figure 26 - FIDIC 2017 Red Book summary of Employer's mandatory obligations' risks

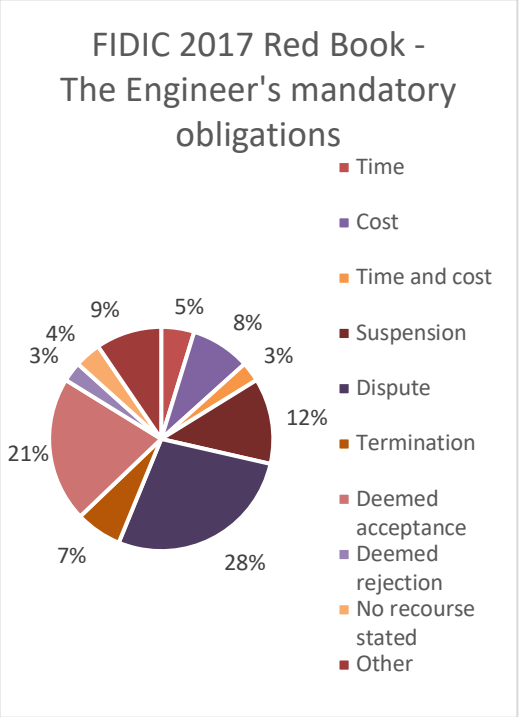


Figure 27 - FIDIC 2017 Red Book summary of the Engineer's mandatory obligations' risks

Of the 66 mandatory obligations which the Employer is required to perform under the FIDIC Red Book 2017, Figure 26 shows a large number result in either additional time and cost (25%), dispute (14%), no recourse (13%), while "other" accounts for 17% of the results of non-performance.

Of the 84 mandatory obligations which the Project Manager must perform under the FIDIC Red Book 2017, Figure 27 shows a large number result in either suspension (12%), dispute (28%), while deemed acceptance accounts for 21% of the results of non-performance.

Under the Employer's mandatory obligations, there is a fairly even split of results for non-performance, whereas with the Engineer's obligations there is certainly a higher result of items which will result in either dispute or which will be deemed to be accepted as a result of non-performance by the Engineer.

7.1.3 Comparison of contracts' exposure to risk related to quantum of obligations

7.1.3.1 Employer action related risks comparison

When comparing the three standard form construction contracts in question, it is evident that the FIDIC Red Book 2017 has a higher number of obligations which the Employer is required to perform. This is not only true on the sum total of the obligations, but is evident that there are significantly more obligations to perform which result in additional time and cost, dispute and termination; when compared to the JBCC PBA 6.2 and the NEC4 ECC.

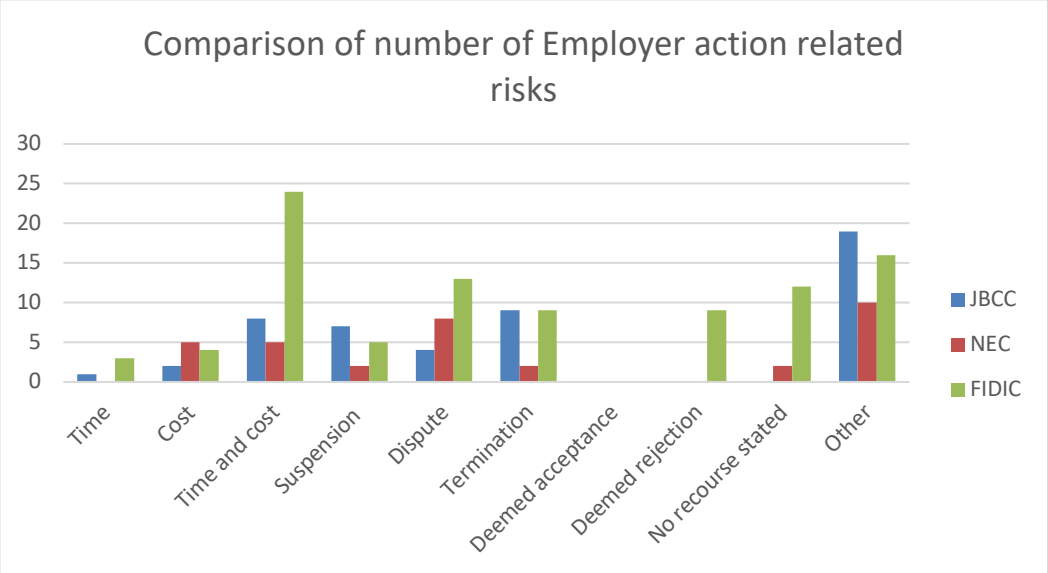


Figure 28 - Comparison of number of Employer action related risks

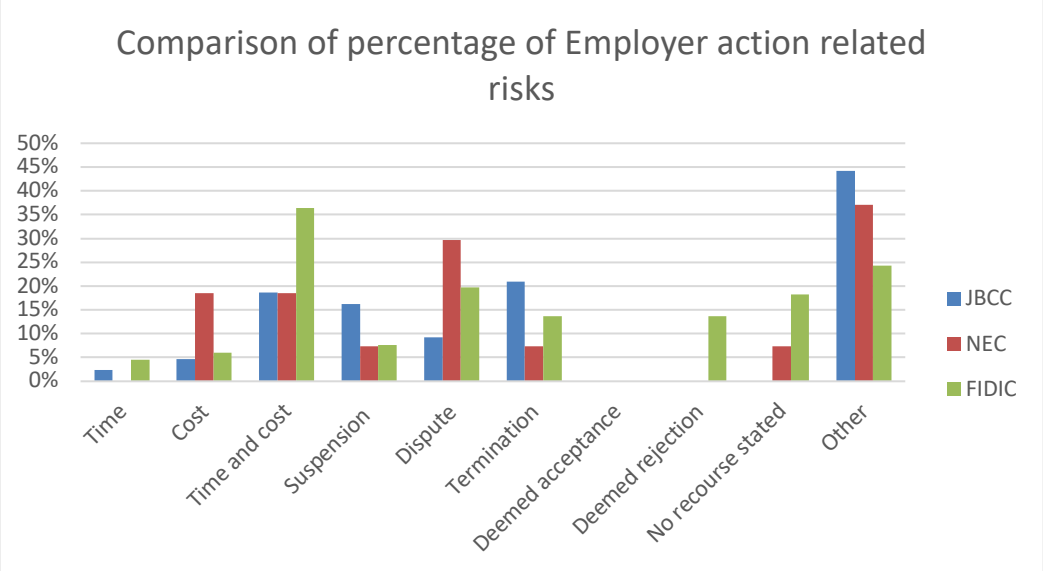


Figure 29 - Comparison of percentage of Employer action related risks

Based on the results shown in Figure 28 and Figure 29 for the sheer number of obligations, the JBCC exposes the Employer to a far higher percentage of risks which result in termination (21% vs. 7 and 14%) when compared to the NEC4 ECC and the FIDIC Red Book 2017. Conversely the FIDIC Red Book 2017 has the highest percentage of obligations which result in time and cost (36% vs. 19% and 19%) when compared to the JBCC PBA 6.2 and NEC4 ECC.

7.1.3.2 Principal Agent / Project Manager / the Engineer action related risks comparison

When comparing the three standard form construction contracts in question, it is evident that the FIDIC Red Book 2017 has a higher number of obligations which the Employer is required to perform. This is not only true on the sum total of the obligations, but is evident that there are significantly more obligations to perform which result in additional dispute and deemed acceptance; when compared to the JBCC PBA 6.2 and the NEC4 ECC.

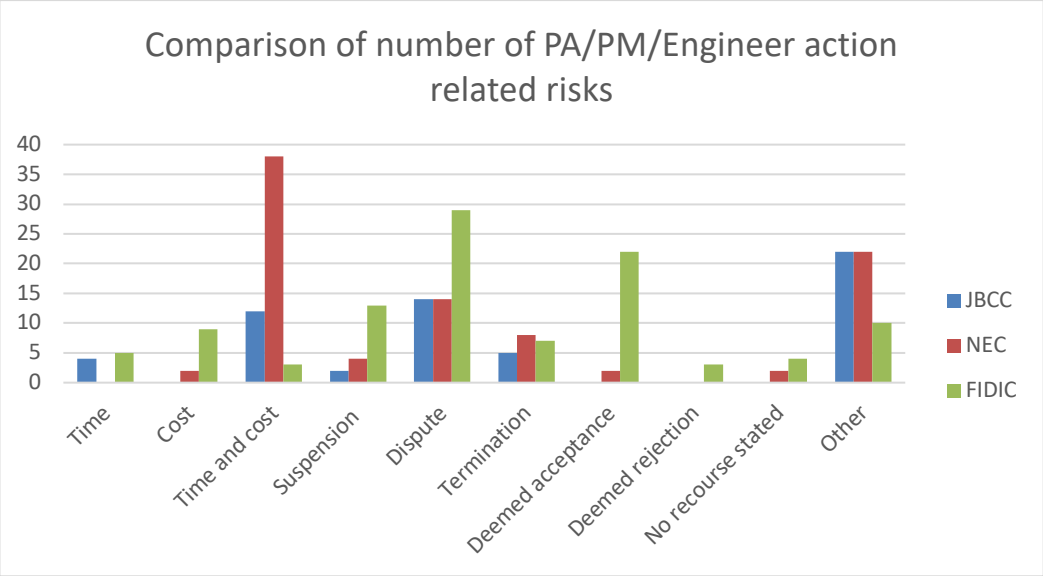


Figure 30 - Comparison of number of PA/PM/Engineer action related risks

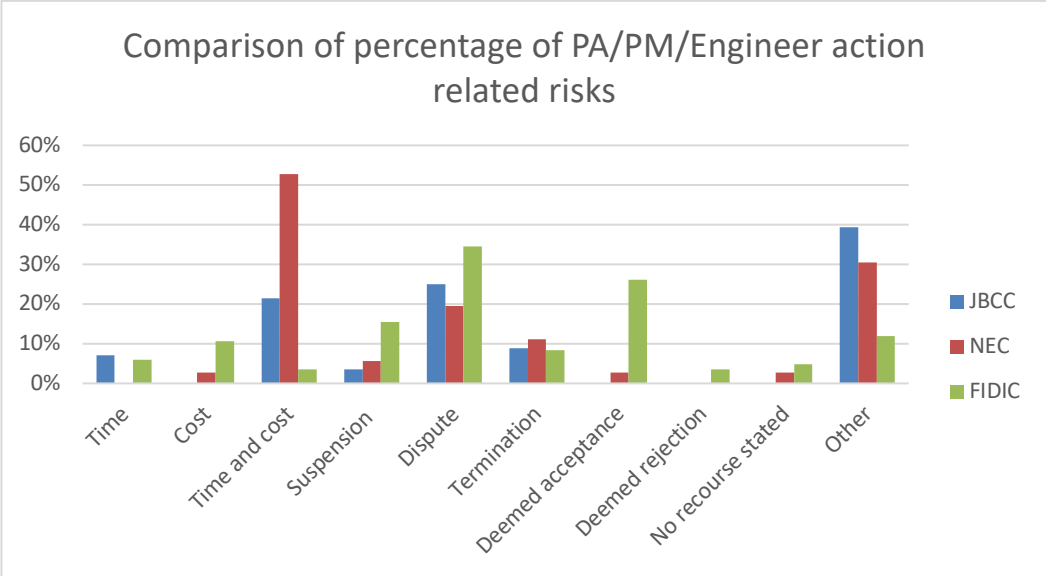


Figure 31 - Comparison of percentage of PA/PM/Engineer action related risks

Based on the results shown in Figure 30 and Figure 31 the sheer number of obligations, the NEC4 ECC exposes the Employer to a far higher percentage of risks which result in termination (53% vs. 21 and 4%) when compared to the JBCC PBA 6.2 and the FIDIC Red Book 2017. Interestingly, all forms of contract result in disputes (25, 19 and 35% respectively) as a large proportion of the result of non-performance of mandatory obligations.

7.2 Contract comparison of risks related to main obligations

7.2.1 Qualitative comparison of main Employer obligations

As has been determined in chapters 4.2 - Risks under the JBCC PBA 6.2; 5.2 - Risks under the NEC4 ECC; and 6.2 - Risks under FIDIC Red Book; the obligations for each of the different categories of obligations covered are wide ranging between the three forms of contract in question and as such cannot be compared on a like-for-like basis. However, if one were to consider the obligations that Segal (2018) describes for under the JBCC PBA 6.2 a limited non-comprehensive comparison can be drawn between the forms of contract in question. However, it must be noted that the purpose of such comparison is not to compare all of the mandatory obligations under each of the contracts (as they are not the same and therefore not entirely comparable), but only those limited mandatory obligations that one author so describes as being the 'main obligations'. This comparison is drawn in Table 26.

For the purpose of clarity the 'main obligations' listed by Segal (2018) of the Employer, are listed as (as covered in 4.2.1 - Risks due to the obligations of the Employer):

i. "*The obligation to appoint a Principal Agent and other agents;*

ii. *The obligation to hand over the site;*

iii. *The obligation to provide a guarantee for payment;*

iv. *The obligation to make payments in accordance with the agreement;*

v. *The obligation to provide construction information and instructions.*"

Table 26 - Risks due to the main obligations of the Employer (contracts comparison)

Action	**JBCC PBA 6.2**		**NEC4 ECC**		**FIDIC Red Book 2017**	
	Clause	**Risk/consequence of no action**	**Clause**	**Risk/consequence of no action**	**Clause**	**Risk/consequence of no action**
The obligation to appoint a Principal Agent and other agents	5.3	Contract cannot function	N/A	Contract cannot function	3.1	Contract cannot function
The obligation to hand over the site	12.1.5	Claim for EOT and cost 23.2.1; 26.7 Contractor can terminate the contract 29.14.2	33.1	Compensation Event 60.1(2)	2.1	Claims for Payment and/or EOT 20.1
The obligation to provide a guarantee for payment	11.5.1	Contractor does not waive its lien over the site 11.10	None	No provision for such guarantee (none needed as the site is not handed over to the Contractor, rather access is given)	*14.15 Provision made in Special Provisions (if so required)	Engineer shall not give notice to commence works 8.1
The obligation to make payments in accordance with the agreement	25.1	Suspend the works 28.1.3 Contractor can terminate the contract 29.14.5	51.2	Interest 51.4	14.7	Finance charges (for delayed payment) - 14.8 Suspend the works (for failure to pay) - 16.1 Claim for EOT and cost plus profit as a

Action	JBCC PBA 6.2		NEC4 ECC		FIDIC Red Book 2017	
	Clause	**Risk/consequence of no action**	**Clause**	**Risk/consequence of no action**	**Clause**	**Risk/consequence of no action**
						result of the suspension – 20.2 Termination (if failure to pay continues) – 16.2
The obligation to provide construction information and instructions	12.1.12	Claim for EOT and cost 23.2.5; 26.7	25.2	Compensation Event 60.1(3)	1.8	Claim for EOT and or payment of such cost plus profit 1.9; 20.2

7.2.2 Qualitative comparison of certain Principal Agent / Project Manager / the Engineer obligations

With the three forms of contract in question having wide-ranging and varying mandatory obligations assigned to the Principal Agent / Project Manager / the Engineer, the following comparison is based on those obligations as covered by Palmer (2006) in his comparison of the same obligations. This comparison is drawn in Table 27:

Table 27 - Risks due to the obligations of the Principal Agent / Project Manager / the Engineer (contracts comparison)

Action	JBCC PBA 6.2		NEC4 ECC		FIDIC Red Book 2017	
	Clause	**Risk/consequence of no action**	**Clause**	**Risk/consequence of no action**	**Clause**	**Risk/consequence of no action**
Approve design of others	*7.3 PA accepts and coordinates design	Claim for EOT and cost 23.2.8	21.2	Compensation Event 60.1(6); 60.1(9)	4.4.1	Deemed to have given notice of No-objection 4.4.1

Action	JBCC PBA 6.2		NEC4 ECC		FIDIC Red Book 2017	
	Clause	**Risk/consequence of no action**	**Clause**	**Risk/consequence of no action**	**Clause**	**Risk/consequence of no action**
Change the works information	17.1.2	Claim for EOT and cost 23.2.3	14.3	Compensation Event 60.1(1)	3.5	Claim for EOT and cost 13.3.1; 3.7
Provide correct setting out information	13.1	Revision of date of Practical Completion – 23.2.5 Adjustment of contract value – 26.0	11.2(16)	Compensation Event 60.1(3)	2.5	Claim for EOT and cost plus profit 4.7.3; 3.7; 20.2
Approve work, final completion	19.3	Practical Completion deemed achieved 19.4	30.2 44.3	Refer dispute to Senior Representatives W1.1	9.1 10.1	Deemed to have given notice of No-objection – 9.1 Deemed take over – 10.1
Respond to communication within specified time	*2.2 Does not specify time	No express recourse. Applicable time-bars dependent on sub-clauses and resulting EOT and cost if applicable Various clauses	13.3	Compensation Event 60.1(6)	*1.3 Does not specify time	No express recourse. Applicable time-bars dependent on sub-clauses and resulting EOT and cost if applicable Various clauses
Accept the contractor's programme		No provision made	11.2	Deemed acceptance on continued failure to accept the programme after contractor notice 31.3	8.3	Deemed to have given notice of No-objection. Initial or revised programme shall be the programme 8.3
Evaluate the work done and issue payment certificates	25.2 25.9 25.15	Contractor suspend the works – 28.1.2	50.1 51.1 53.1	Make correction to previous valuation – 50.6	14.6.1 14.13	Make correction to previous valuation – 14.6.3

Action	JBCC PBA 6.2		NEC4 ECC		FIDIC Red Book 2017	
	Clause	**Risk/consequence of no action**	**Clause**	**Risk/consequence of no action**	**Clause**	**Risk/consequence of no action**
	26.13	Contractor terminates – 29.14.7		Refer dispute to Senior Representatives – W1.1 Termination – 90.1 / 91.4		Contractor suspend the works – 16.1(a) Contractor terminates – 16.2.1(b)
Testing	19.1.1 *17.1.5 - Instructs testing of samples and/or finishes	Practical Completion deemed achieved – 19.4 Revision of date for Practical Completion – 23.2.4 Adjustment of contract value – 26.7	41.5	Payment effect after defects date for item which testing is a condition 41.5	7.4 9.1	Deemed to have given notice of No-objection – 9.1 EOT and cost plus profit – 20.1 (if prevented by the Engineer to carry out Tests on Completion)
Search for defects	19.6 21.2	Final completion deemed to be achieved 21.9	43.1	Corrects defect whether or not Supervisor has notified it – 44.1	7.5	Deemed to have given notice of No-objection – 7.5
Assess claims / compensation events	23.7	Claim deemed refused 23.8	64.1	Deemed acceptance of Compensation Event quotation – 64.4	3.7	Deemed to be a Dispute which may be referred by either Party to the DAAB for its decision under Sub-Clause 21.4…without the need for a NOD – 3.7.3 ii

7.2.3 Qualitative comparison of limited general risks during construction

As has been stated in 4.2.3 - Risks during construction, the remaining construction related risks are limited for the purpose of this report as: Health and Safety, Environment and Quality. The comparison in Table 28 is based on those identified risks only:

Table 28 - Risks during construction (contracts comparison)

Action	JBCC PBA 6.2		NEC4 ECC		FIDIC Red Book 2017	
	Clause	**Risk/consequence of no action**	**Clause**	**Risk/consequence of no action**	**Clause**	**Risk/consequence of no action**
Health and Safety Plan	None	No express requirement	27.4	Employer terminates –91.3 (R15) (if Contractor substantially breaks a health or safety regulation)	4.8	Cannot commence construction on site 4.8
Environmental Management Plan	None	No express requirement	Scope	Cannot commence construction on site – 31.3 Deemed acceptance if the Project Manager continues failure to accept programme – 31.3	4.18	Notice to correct – 15.1 Termination – 15.2
Quality Management Plan	None	No express requirement	40.2	Compensation Event – 60.1(9) Refer dispute to Senior Representatives – W1.1	4.9.1	Deemed Notice of No-objection 4.9.1

7.3 Summary of findings

The following is my own summary of findings on the standard form contracts in question, them being the JBCC PBA 6.2, NEC4 ECC Option B and FIDIC Red Book 2017:

7.3.1 Balance of risk between Employer and Contractor

On comparison of the above contracts it is gathered that all three have a relatively equitable split of risk between the Employer and the Contractor; however, in saying that one needs to consider that although the JBCC PBA 6.2 has an even split of risk, the contract has some serious short comings which creates more risks for both the Employer as well as for the Contractor. On the Employer side, such risks may arise because the contract allows for construction information to be issued throughout the project, while the Contractor is only obliged to submit its final programme once all construction

information is received. Secondly, the contract does not rely on a well-documented scope of work or specification document. On the Contractor's side one could argue that it is not able to prepare an accurate programme of the construction work at the time the contract is signed, as the construction information may very well not be sufficient for that purpose.

7.3.2 Risks due to the Employer's obligatory actions

From the limited analysis of the three standard form contracts it is evident that all of them assign similar 'main obligations' to the Employer; those being for the Employer to: hand over (or give access to) the site; to provide construction information; to make payment for work actually done.

However, in terms of the quantum of risks as a result of the Employer's obligatory actions, the three contracts vary significantly, with the FIDIC Red Book 2017 assigning by far the most actions to the Employer, as such this contract requires for a very mature and involved Employer. It is put that the Employer needs to carefully consider this contract, as it would need to commit to high levels of in-depth involvement in the project; if not, the Employer is subjected to significant risk owing to its non-action.

The JBCC PBA 6.2 also requires for the Employer to be heavily involved in the contract by way of obligatory actions. Failure to attend to such actions by the Employer has a plethora of repercussions, with the contract now making provision for the Contractor to suspend the work if the Employer does not meet certain 'main obligations'.

On the other hand, the NEC4 ECC also requires the Employer to be involved, but to a lesser extent and in a more collaborative approach when compared to both the FIDIC Red Book 2017 and the JBCC PBA 6.2.

From the above it is evident that the Employer is advised to study the contract prior to the project in order to understand exactly what actions are expected of it, as well as when such actions are required to be performed; failure in this regard could ultimately compromise the success of the project.

7.3.3 Risks due to the Principal Agent / Project Manager / the Engineer's actions

From the analysis it is evident that the Principal Agent / Project Manager / the Engineer shares certain 'main obligations' under the three standard form contracts in question. Such obligations can be diluted and limited to: issue construction documentation; monitor the progress of the works (typically against an approved or accepted programme);

administer the contract; certify payment; agree or determine extension of time and cost claims; and finally, to certify for completion.

Given the above shared obligations it is noteworthy that the three contracts require different levels of obligatory contractual input from the Principal Agent / Project Manager / the Engineer. In terms of quantum the FIDIC Red Book 2017 requires the highest level of input, with the JBCC PBA 6.2 requiring the least actions. Unfortunately, the JBCC PBA 6.2 does not require any input from the Principal Agent with regards to either acceptance or approval of the programme, nor is the Principal Agent required to provide any input in early warning meetings and/or risk identification. Although there are certain differences between the FIDIC Red Book 2017 and the NEC4 ECC (especially in the way the contracts are drafted), both require excellent project and contract management from the Engineer / Project Manager, with both contracts assigning rights to the Contractor for key failures by the Engineer / Project Manager.

7.3.4 General construction risks

General construction risks on construction projects is nigh endless, as such for the purpose of this research report these risks were limited to Health and Safety, Environment and Quality in order to compare the three contracts in question with regards to the provision of terms and conditions assigning obligations on the parties.

The three contracts in question cannot be compared on a like-for-like basis, as the JBCC PBA 6.2 does not have any express terms or conditions relating to either health and safety, the environment, nor quality; thus, exposing the Employer to risk owing to its non-provision for the management of such risks.

Both the NEC4 ECC as well as the FIDIC Red Book 2017 expressly call for health and safety plans as well as for quality management systems from the Contractor, in both instances for the acceptance or approval by the Engineer / Project Manager. The express requirement for protection of the environment is one area where the FIDIC Red Book 2017 trumps the NEC4 ECC (with respect to risk to the Employer), as the latter does not have any such provision, except where so described in the Scope (if at all).

From the above it is concluded that the JBCC PBA 6.2 is a standard form of contract which exposes the Employer to higher levels of risk when compared to the NEC4 ECC and the FIDIC Red Book 2017, with specific reference to general construction risk under the headings of Health and Safety, the Environment and Quality.

7.4 Testing the hypotheses

7.4.1 The first hypothesis

The hypothesis:

Construction projects are exposed to an almost unlimited number of risks, however those risks can be categorised for the Parties to the construction contract and the construction work in general.

Conclusion:

In the report the hypothesis was supported with regard to the risks on construction projects being nearly unlimited, after all each project is unique and therefore has unique risks – several delimitations were required to be put in place in order to structure this report to the extent that one did not simply attempt to determine all of the possible risks that projects could be exposed to.

It was further found that the risks could be categorised for the different parties to the construction contract and to an extent construction work in general, although for the purpose of the report the category of construction work in general was delimited to only focus on certain aspects, as construction work in general is certainly prone to high levels of risk and could warrant a study on its own.

It is likely too subjective to make a definitive statement, but of the three contracts in question the NEC4 ECC is the most balanced in terms of risk allocation, in that a core principal of it is to allocate risk to the party that is best able to manage it. What was surprising though, was that the JBCC PBA 6.2 assigned more obligations to the Employer than the NEC4 ECC, and further that the 2017 FIDIC Red Book is the most onerous in terms of obligations on the Employer and the Engineer, which itself is not without risk.

7.4.2 The second hypothesis

The hypothesis:

Potential Employer risks could be categorised in terms of the limited categories identified in the limitations (1.7 Limitations).

Conclusion:

This hypothesis was not supported. Although it is certainly possible to categorise certain limited Employer risks and do a comparison of them, the list would preclude many of the obligations that the Employer carries under the JBCC PBA 6.2, NEC4 and FIDIC 2017

Red Book contracts and would for that reason not look at the contracts in question as a whole, but rather only from a subjective point of view.

7.4.3 The third hypothesis

The hypothesis:

Potential Employer risks can be related in terms of specific contract clauses and that the "effect" of the potential Employer risks can be expressed in terms of contract clauses with clause reference to financial and time impact.

Conclusion:

This hypothesis was partially supported insofar as that potential Employer risks can in fact be related in terms of specific contract clauses, but not as a direct line of comparison, as the contracts in question have different methods of assigning risk and managing the works from a contract administration point of view. Certain obligations can be compared side-by-side, but this would preclude many of the other risks identified as being unique in any of the JBCC PBA 6.2, NEC4 and FIDIC 2017 Red Book contracts.

Lastly, most of the risks could be related to financial and time impact, with the odd example of certain risks not being classic examples in construction contracts of traditional 'time and cost' risks.

8 CONCLUSION

8.1 Conclusion

This research report attempted to compare from a Project Management point of view (thus not from a legal point of view) three different standard form construction contracts; those being the JBCC PBA 6.2, NEC4 ECC Option B and FIDIC Red Book 2017, with specific reference to the risks that these standard form construction contracts hold for the employer; specifically the Employer's risks due to its own actions, the project manager's actions and general construction risks.

In attempting such comparison, it was necessary to limit the extent of the research, which in the end was likely too broad in any event. This certainly begs the question why such comparison was done in the first place, as the comparison is not complete and finally is so big that it proves to be almost too voluminous to be of value; any summary comparison of these contracts in reality will be very limited and not cover either the ethos or the entirety of each of the different standard form contracts in question.

Regarding the Employer's risk, the three contracts in question share certain basic Employer obligations; those being mainly for the Employer to hand over the site, provide the construction information as well as to pay the contractor. However, the magnitude of the Employer's involvement (and as such a result thereof the risk to the Employer) is different between them; with the FIDIC Red Book 2017 by far and away leading the quantum of risks that the Employer is exposed to as a result of its own non-compliance. On the other hand, the NEC4 ECC requires a collaborative type of input from the Employer. However, of the three the JBCC PBA 6.2 exposed the Employer to risks, not by itself not performing obligations, but in not being compliant with what is expected of a modern construction contract.

Regarding the Project manager's (or Principal Agent or the Engineer) risk, the three contracts in question share certain basic obligations for the Project Manager, the exhaustive list of which is too long for the purpose of this summary. Mainly, the Project Manager is responsible to issue construction documentation, monitor the progress of the works (typically against an approved programme), administer the contract, certify payment, agree or determine extension of time and cost claims, and to certify for completion. The role of the Principal Agent in the JBCC PBA 6.2 is akin to an arms-length authoritative role, whereas both the NEC4 ECC and the FIDIC Red Book 2017 bring the role of the Project Manager (and the Engineer) to being more of a collaborative

role in order to achieve project success and ensure that potential issues are highlighted at an early stage and can be managed to minimise the potential risks related to such issues. The approach in the NEC4 ECC is that the Project Manager is an integral part of the team that the contract creates between the Employer and the Contractor, with the Project Manager having to manage the collaboration; whereas such attempt seems to be made in the FIDIC Red Book 2017, but it is unfortunate that the same remains largely legalistic in its approach and creates a massive administrative burden on the Engineer by way of the exhaustive list of mandatory obligations which the Engineer is subjected to.

Regarding general construction risk, the three contracts in question cannot be compared on a like-for-like basis, as the JBCC PBA 6.2 does not have any express terms or conditions relating to either health and safety, the environment, nor quality; thus, exposing the Employer to risk owing to its non-provision. On the other hand, both the NEC4 ECC as well as the FIDIC Red Book 2017 expressly call for health and safety plans as well as for quality management systems from the Contractor. One area where the FIDIC Red Book 2017 trumps the NEC4 ECC (with respect to risk to the Employer), as the latter does not have any express requirement for protection of the environment, but instead relies on the Scope for such requirements.

The above summary conclusion of each of these standard from contracts (which contracts are fit for the traditional procurement route) and the risks they expose the Employer to is all good and well; however, in the current projects environment we collectively operate in, it may well be that the traditional approach to contracting is not the solution to efficient and collaborative contracting, and that the Latham report of the mid 1990's (which by this time is more than 25 years old) was really seminal in its approach to contracts. This certainly begs the question: why has the uptake of the use of modern contracting in South Africa been so lack lustre? The traditional approach seems to place the Employer and the Contractor into position to stand directly against each other, with a very typical master-servant relationship; should this relationship be changed to a more collaborative approach where the both the Employer and the Contractor are invested in the project, it stands to reason that projects are likely to be more successful. Ultimately, it is plausible that both the Employer as well as the Contractor stand the chance to have increased returns from their investment, with the Employer likely being exposed to lower levels of risk.

It is recommended that any construction project Employer do a thorough analysis of their contracting strategy as well as to do a detailed study of whether it will be able to meet all

of the mandatory obligations related to the contracting strategy and standard form contract in question. Lastly, the Employer has to ensure that a competent main agent is employed to act on its behalf, so as to ensure the meeting of mandatory obligations (which results in risk management) as well as to ensure that the main agent is measured against its performance in terms of the mandatory obligations in the contract.

8.2 Suggested topics for future research

From the research several topics were identified for future research, these are listed as:

i. To determine whether the 1994 Latham Report is applicable in the South African general building contracting market;
ii. To determine whether the lack of provision for a fully detailed scope of work document in the JBCC PBA results in Employers being able to exploit consultants to perform at-risk work before construction;
iii. To determine whether at-risk work and the assumed lower quality of tender documentation issued for tender as a result of the lack of payment for services negatively impact whole life cycle cost of the project;
iv. To determine by way of market research what the uptake is of the new FIDIC Red Book 2017 as opposed to the 1999 version of the same.

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12 APPENDICES

12.1 Appendix 1 - CIDB Classification of Construction Work

Table 29 shows in detail the comparison between the different classifications of work types, those being: Civil Engineering works, Electrical Engineering works (infrastructure), Electrical Engineering works (buildings) and lastly, General Building works (with General Building Works being of interest for the purpose of this research report):

Table 29 - CIDB Classification of Construction Work (Construction Industry Development Board (CIDB), 2015)

Description	Designation	Definition	Work types	Examples
Civil Engineering works	**CE**	Construction works that are primarily concerned with materials such as steel, concrete, earth and rock and their application in the development, extension, installation, maintenance, removal, renovation, alteration, or dismantling of building and Engineering infrastructure	Water, sewerage, roads, railways, harbours and transport, urban development and municipal services	Structures such as a cooling tower, bridge, culvert, dam, grand stand, road, railway, reservoir, runway, swimming pool, silo or tunnel The results of operations such as dredging, earthworks and geotechnical processes. Township services, water treatment and supply, sewerage works, sanitation, soil conservation works, irrigation works, storm-water and drainage works, coastal works, ports, harbours, airports and pipelines.
Electrical Engineering works (Infrastructure)	**EP**	Construction works that are primarily concerned with development, extension, installation, removal, renovation, alteration or dismantling of Engineering infrastructure: a) relating to the generation, transmission and distribution of electricity; or b) which cannot be classified as EB.	Electrical power generation, transmission, control and distribution equipment and systems.	Power generation Street and area lighting Substations and protection systems Township reticulations Transmission Lines Supervisory control and data acquisition systems
Electrical Engineering works (buildings)	**EB**	Construction works that are primarily concerned with the installation, extension, modification or repair of electrical installations in or on any premises used for the transmission of electricity from a point of control to a point of consumption, including any article	All electrical equipment forming an integral and permanent part of buildings and/or structures, including any wiring, cable jointing and laying and electrical overhead line construction	Electrical installations in buildings Electrical reticulations within a plot of land (erf) or building site Standby plant and uninterrupted power supply Verification and certification of electrical installations on premises

Description	Designation	Definition	Work types	Examples
		forming part of such an installation		
General building works	**GB**	Construction works that: a) are primarily concerned with the development, extension, installation, renewal, renovation, alteration, or dismantling of a permanent shelter for its occupants or contents; or b) cannot be categorised in terms of the definitions provided for civil Engineering works, electrical Engineering works, mechanical Engineering works, or specialist works.	Buildings and ancillary works other than those categorised as being: a) civil Engineering works; b) electrical Engineering works; c) mechanical Engineering works; or d) specialist works.	Buildings for domestic, industrial, institutional or commercial occupancies Car ports Fences other than classified as SS Stores Walls

12.2 Appendix 2 - Summary of the main features of the JBCC PBA

The CIDB (2005) provides an excellent summary in Table 30 of the main features of the JBCC PBA (in verbatim):

Table 30 - CIDB summary of main features of the JBCC PBA (Construction Industry Development Board (CIDB), 2005)

Aspect	**Commentary**
Application	Suitable for the building sector of the construction industry where the works are designed and administered by agents of the Employer who are co-ordinated by a Principal Agent.
Provision for different contracting strategies	Only suitable for design by Employer contracting strategy.
"Tender" vs "contract"	"Tender" included as part of the "Contract".
Structure	Separate documents with many common clauses repeated in each document.
Design by either party	Contractor is not responsible for the design of the permanent works. However nominated and selected subcontractors do carry design responsibility which is ceded by the Contractor to the Employer
Limitation of liability Loss of revenue, loss of profit, indirect and consequential:	To be addressed as an additional condition.
Other direct losses during the contract period:	Unlimited for defects to the extent which Contractor is responsible, uncertain for others.
Loss and damage to Employer's surrounding property:	Contractor liable for making good physical loss and to repair damage from whatever cause. Liability limited to the amount of the contract works insurance provided for in the contract.
Latent defects:	Liable for latent defects for a period of five years after the completion of the contract.

Aspect	Commentary
Financial risk allocation	The risk allocation is fixed based on the principle that the risk carried by the party best suited to deal with it.
Role of the Employer and its agents	The Principal Agent is given full authority and obligation to act in terms of the contract and may as such bind the Employer. Principal Agent is required to determine any matter by consultation with the parties and if agreement is not reached, to determine the matter by making a fair determination in accordance with the contract, accounting for the circumstances.
Subcontracting	Provision is made for nominated subcontractors and selected subcontractors i.e. subcontractors appointed by the Principal Agent in consultation with the Contractor. The Contractor is liable as if he/she had not subcontracted where the subcontractor is selected. The Contractor is not liable in certain respects where the subcontractor is nominated. Back to back forms of subcontract are provided to facilitate the appointment of Contractors.
Claims procedures	Provision made for the adjustment of the contract value and the date for practical completion under prescribed circumstances. Claims for such adjustments must be made within the stated period of becoming aware of becoming aware of the circumstances giving rise to a claim, failing which no compensation will be made.
Dispute management	In “state” contracts disputes are submitted to litigation. Institution of the action must be commenced and the process served within 1 year form the date of the existence of the dispute, failing which the dispute shall lapse. In “non-state” contracts, disputes are referred to arbitration or adjudication.

Note however that the above table refers to an earlier version of the PBA, but in general terms are still applicable.

12.3 Appendix 3 - JBCC PBA key features and layout

The Principal Building Agreement follows the project execution sequence, with the documents' aim being to set out clear, balanced and enforceable set of procedures, rights and obligations, which when competently managed and administered, protect the Employer, Contractor and subcontractors alike (Construction Industry Development Board (CIDB), 2005) ((The Joint Buildings Contracts Committee (JBCC), 2018)).

The JBCC PBA is not a standalone document, and forms the cornerstone of a whole suite of contract agreements which are only applicable for use with the PBA; the suite of documents being listed as follows:

i. JBCC PBA - Contract Data: This document incorporates specific requirements by the parties;
ii. JBCC - General Preliminaries: This document generally covers all aspects of preliminaries for most types of projects;
iii. JBCC Nominated/Selected Subcontract Agreement: The subcontract agreement that replaces the JBCC PBA when subcontracting via the Nominated / Selected subcontract route with common clauses retaining the same numbering as the JBCC PBA;
iv. A comprehensive set of certificate forms and support documents for use in the administration of the agreement (The Joint Buildings Contracts Committee (JBCC), 2018), listed as follows (for the PBA only):
    a. General preliminaries;
    b. Certificate of site possession;
    c. Guarantee for construction;
    d. Guarantee for payment;
    e. Waiver of Contractor's lien;
    f. Guarantee for advance payment;
    g. Recovery statement;
    h. Certificate for payment;
    i. Certificate for practical completion;
    j. Certificate for final completion;
    k. Subcontractor's payment certificate notification;
    l. N/S recovery statement;
    m. Payment certificate notification;
    n. Adjudication rules.

The PBA is made up of 8 sections containing the related clauses, listed as follows:

i. Interpretation
    1. Clause 1 – Definitions and interpretation;
    2. Clause 2 – Law, regulation and notices;
    3. Clause 3 – Offer and acceptance;
    4. Clause 4 – Cession and assignment;
    5. Clause 5 – Documents;
    6. Clause 6 – Employer's agents;
    7. Clause 7 – Design responsibility;

ii. Insurances and securities
    8. Clause 8 – Works risk;
    9. Clause 9 – Indemnities;
    10. Clause 10 – Insurances;
    11. Clause 11 – Securities;

iii. Execution
    12. Clause 12 – Obligations of the parties;
    13. Clause 13 – Setting out;
    14. Clause 14 – Nominated subcontractors;
    15. Clause 15 – Selected subcontractors;
    16. Clause 16 – Direct contractors;
    17. Clause 17 – Contract instructions;

iv. Completion
    18. Clause 18 – (Interim completion – n/s subcontract agreement);
    19. Clause 19 – Practical completion;
    20. Clause 20 – Completion in sections;
    21. Clause 21 – Defects liability period and final completion;
    22. Clause 22 – Latent defects liability period;
    23. Clause 23 – Revision of the date for practical completion;
    24. Clause 24 – Penalty for late or non-completion;

v. Payment
    25. Clause 25 – Payment;
    26. Clause 26 – Adjustment of the contract value and final account;
    27. Clause 27 – Recovery of expense and/or loss;

vi. Suspension and termination
    28. Clause 28 – Suspension by the contractor;

29. Clause 29 – Termination;

vii. Dispute resolution

30. Clause 30 – Dispute resolution.

viii. Agreement

In the preface to the JBCC PBA 6.2 a warning is included by the authors, which highlights that changes made to the documents should be made by legal professionals with extensive knowledge of the JBCC documentation and the construction industry, as changes drafted by others have results that are often very different from those intended, which corresponds to Mason's (2016) illustration of the transfer of risk, as shown in Figure 6.

The JBCC PBA 6.2 is limiting to Employers with regards to different contracting strategies, as the contract only lends itself to general contracting where the Employer provides the design and the quantities are re-measurable.

12.4 Appendix 4 – JBCC PBA 6.2 critical analysis

The below referenced is the critical analysis of the JBCC PBA 6.2 for all mandatory obligations outside of the 'main obligations' as referenced by Segal (2018) and covered under 4.2.

12.4.1 Risks due to the obligations of the Employer

12.4.1.1 Comply with the law, obtain permits, planning, building or similar permissions and pay charges for the works (Clause 2.1)

The law under which the contract is required to be carried out is stated by the Employer in the Contract Data – it is to this same law that the Employer is required to comply with in all its dealings under the contract. To that end Segal (2018) contends that while the Contractor is an expert in building and as such expected to be conversant with any applicable regulations, it is the Employer's responsibility to provide the Contractor with construction information that are in accordance with the regulations, and if not revise them to suit. In South African contracts the National Building Regulations and Standards Act No. 103 of 1977 (as amended) is applicable, so too is the SANS 10400 National Building Regulations, as such Employers are required to obtain approval in terms of section 7(6) of the Act above from the local authority "*…to commence or proceed with the erection of a building…*".

12.4.1.2 Communicate in the language of the contract in a format that can be read, copied and recorded (Clause 2.2)

The language of the contract is stated in the Contract Data, and In keeping with modern technology e-mail is specifically acknowledged as a form of communication which is accepted under the contract, as it rightly should as according to Segal (2018) it was given legal certainty owing to the promulgation of the Electronic Communications and Transactions Act 25 of 2002. Any oral communication is accordingly not binding on the parties, as such the Employer is to be careful to ensure that all communication is in accordance with the clause, as a failure in that regard will result in those communications being void, as was ruled in the *SA Sentrale Ko-op Graanmaatskappy Bpk v Shifren 1964 (4) SA 760 (A)* case from which the 'Shifren' principle has been adopted where oral agreements have to be reduced to writing in order to make them binding on the parties.

12.4.1.3 Act in good faith should any provision of the agreement be unenforceable (Clause 3.4)

Reference is made in some detail as to the good faith obligations of the parties in 5.2.1.2 - Act in a spirit of mutual trust and co-operation (Core Clause 10.2), however under the PBA 6.2 it is specifically stated that the parties are only required to act in good faith "*should any provision of the agreement be unenforceable*", for which the findings in the above section show that if there is no deadlock breaking mechanism the obligation is in itself empty.

12.4.1.4 Sign the original agreement (Clause 5.2)

As stated in 12.4.1.2 the 'Shifren' principle is applicable to the signing of contracts, as such the JBCC PBA makes it an express requirement for the original agreement to be signed by both parties and for the same to be kept by the Principal Agent. This action of signing the agreement brings to life the contractual relationship between the parties and the time for the required securities, the programme and other documents to be submitted in terms of the contracts starts. As a result of signing the agreement, according to Segal (2018) the Employer is obliged to hand over the site to the Contractor subsequent to signing the original agreement.

Should the Employer fail to sign the agreement it may be argued that no agreement exists in the first place, of course the Contractor may argue differently and may likely litigate if he/she has suffered losses as a result of the client agreeing to enter into a contractual relationship and has simply not signed the contract.

12.4.1.5 Do not interfere or prevent the Principal Agent and/or agents from exercising fair and reasonable judgement (Clause 6.6)

A failure by the Employer to keep with this obligation would be a breach of contract which may give the Contractor the ordinary right to a dispute, as the Employer is required both expressly in terms of the contract to allow the Project Manager (in this case the Principal Agent) to act fairly as was ruled in *Costain v Bechtel [2005] EWHC 1018* and binds the Principal Agent to act in such a fashion in terms of the law.

The Contractor has the right to dispute the matter in terms of clause 30.1 if he/she is of the opinion that the Principal Agent is not acting fairly towards him/her.

12.4.1.6 Take full responsibility for the works from the date for the certificate of practical completion (Clause 8.1)

On achievement of Practical Completion, the Contractor is absolved from its obligation to take responsibility of the works, at this time the same responsibility is passed on to the Employer – this is the logical point for the Employer to take this responsibility as this is the time at which the Employer starts to enjoy the use of the end product of the construction work. To this end the Employer is from this point forward required to undertake all maintenance on the property (not the correction of defects) and all insurances.

A failure by the Employer in this regard would result in its own losses suffered should any event occur which could lead to damage or loss.

12.4.1.7 Effect and keep insurances listed in the joint names of the parties, if so required (Clause 10.1)

Careful planning is required when insurances are considered; as such the Employer must carefully consider the risks involved with the planned project. Based on the outcome of such risk identification study the Employer must include the insurance requirements in the Contract Data. According to Segal (2018) the historic practice of insuring the works for 110% of the contract sum is inadequate in the modern environment, to that end the Employer is best advised to obtain expert advice on the insurance required, while taking cognisance of cost escalation, construction period, variation instructions possibly issued, scope changes, etc.

Of interest in the JBCC PBA 6.2 is that the Employer takes out the works insurance if:

i. The contract has sectional completion dates (refer to clause 10.2);
ii. The works are alterations and additions to an existing property (refer to clause 10.3).

To this end responsibility for the insurance of the works rests entirely with the Employer and accordingly the Contractor is indemnified against loss or damage (refer to clause 9.2.7).

If the Employer is responsible for the insurance of the works, it is its responsibility to ensure that the insurance is taken out in terms of the clause and the amounts and deductibles stated in the Contract Data. This could include the: works insurance (clause 10.1.1), supplementary insurance (clause 10.1.2), public liability insurance

(clause 10.1.3), removal of lateral support insurance (clause 10.1.4) and any other insurances (clause 10.1.5) stated in the Contract Data.

Segal (2018) accurately refers to the effecting of the insurances as a condition precedent to handing over the site to the Contractor. If the Employer fails to effect the required insurance within 10 working days after notice to do so, the Contractor may suspend the works in terms of clause 10.6.

12.4.1.8 Effect and keep insurances for work in sections, alterations and additions (Clause 10.2)

Refer to 12.4.1.7.

12.4.1.9 Provide proof of insurances to the Contractor (Clause 10.3)

Should the Employer be required in terms of the Contract Data to take out the insurances he/she shall take out such insurances prior to the commencement of the works and provide the Contractor proof of such insurance cover, and according to Segal (2018) on request of the Contractor provide the full insurance policy to the Contractor.

Should the Employer fail in this regard, the Contractor may give the Employer ten working days to comply; if the Employer still fails to comply the Contractor may suspend the works and take out the required insurances. Such costs shall be recovered from the Employer (refer to clause 10.6).

12.4.1.10 Give notice to the insurer to clarify the status of the insurance (Clause 10.7)

Where the agreement is terminated in terms of clause 29 and the Employer was responsible for the effecting of the insurances in terms of the Contract Data, the Employer shall give notice to the insurer to clarify the status of the insurance.

12.4.1.11 Inform insurer of relevant changes in terms of the agreement (Clause 10.9)

The requirement in terms of clause 10.9 is applicable when the Employer is required in terms of the Contract Data to obtain the insurances. The relevant changes would be different for the different types of insurances and the changes applicable, but as an example may be for a scope change on the project by way of contract instructions which has increased the contract value – in such an instance the insurance would be adjusted based on the revised contract value to ensure that the Employer is adequately covered.

Failure by the Employer would result in clause 10.8 being applicable if the original insurance is no longer sufficient and leaves the Employer with inadequate cover for the loss or damage suffered.

12.4.1.12 Pay the amount unjustifiably called from the security including interest to the Contractor (Clause 11.9)

Should the Employer have made un unjustifiable call on the security so effected by the Contractor, the Employer is liable to pay the Contractor such amount including default interest (in terms of clause 27.1.2) and compensatory interest (in terms of clause 27.1.5) if applicable.

Each payment certificate shall include for amounts as listed in clause 25.3, with one of these being 25.3.9: "*Interest amounts included in the recovery statement*", accordingly if the Employer does not pay such amounts, the Contractor has the right to terminate the agreement in terms of clause 29.14.5: "*The Employer has failed to pay the amount certified by the due date*". In the recent case of *Aveng Grinaker v MEC Department of Human Settlements (EL459/15) [2018] ZAECELLC 3; [2018] 3 All SA 466 (ECLD, East London) (5 June 2018)* judge Mageza ruled that the Principal Agent binds the Employer with the issue of a payment certificate and that the Employer thus is obliged to make the payment to the Contractor accordingly.

12.4.1.13 Record specific requirements [CD] where the existing premises will be in use and occupied during the execution of the works, including restriction of working hours [CD] (Clause 12.1.2)

The Employer is obliged to state in the Contract Data specific requirements where the existing premises will be in use and occupied during the execution of the works. This requirement exists to provide the Contractor with clear restrictions at the time it prepares its tender to plan for inefficiencies owing to the restrictions imposed and protects the Employer (or its tenant occupying the building) from the Contractor causing disruption, other than planned.

Failure by the Employer to state such restrictions may result in the Contractor working at times that do not suit the occupant of the premises, which could result in disputes between the Employer and the tenant.

12.4.1.14 Record and describe relevant natural features and known services [CD] where the Contractor shall be responsible for their preservation (Clause 12.1.3)

The Employer is obliged to determine prior to tendering the work to which natural features (if any) are to be preserved during construction – examples of this may include trees which may not be removed, graves that are required to be preserved, etc. Additionally, any known services (typically underground) are to be determined by the Employer (by way of its professional team) and shown on the drawings and described in the Contract Data, so as to furnish the Contractor with the necessary information to plan the construction work around such services.

A failure by the Employer may result in the Contractor enjoying a right to submit a claim against the Employer for extension of time with cost if applicable in terms of clause 26.5 and 26.6 as any change to the information provided at the time the Contractor submitted its tender could result in a claim for delays, of course within reason; but that is for the Principal Agent to rule in terms of clause 26.7.

12.4.1.15 Define any restrictions to the site or areas that the Contractor may not occupy [CD] (Clause 12.1.4)

The Employer is obliged to determine prior to requesting tenders for the work any restrictions (if any) there may be (during construction) to the site (or in that case access to the site) and areas surrounding the site. This may ordinarily include for restrictions to working hours, noise levels, access routes, laydown areas and the like. These are to be thoroughly detailed, as the Contractor will base its tender sum and program on the imposed restrictions.

A failure by the Employer may result in the Contractor enjoying a right to submit a claim against the Employer for extension of time with cost if applicable in terms of clause 26.5 and 26.6 as any change to the information provided at the time the Contractor submitted its tender could result in a claim for delays, of course within reason; but that is for the Principal Agent to rule in terms of clause 26.7.

12.4.1.16 Supply free issue [CD] to suit the programme (Clause 12.1.10)

If the Employer is planning on providing any free issue (Defined as: "*Materials and goods provided at no cost to the Contractor by the Employer for inclusion in the works*") the same is required to be so stated in B7.0 of the Contract Data at the time of tendering and is obliged to provide such free issue in terms of the Contractor's programme.

Failure by the Employer to supply free issue by the date planned shall result in a notification for a delay and subsequently a claim for additional time and cost (cost in terms of clause 26.7) by the Contractor, all in accordance with the right that the Contractor enjoys in terms of clause 23.2.6: "*Late supply of free issue…for which the Employer is responsible*".

12.4.1.17 Define the extent of work to be carried out by direct Contractors [CD] (Clause 12.1.11)

For the Contractor to adequately plan its construction work and sequencing of the same the Employer is obliged to provide the tenderers with the extent of work to be carried out by direct Contractors in the Contract Data at the time of tendering.

In my experience the work carried out by direct Contractors is often towards the very end of the project (think of tenant fit out items, art installations, specialist data installations, furniture installations and the like) and could prevent the Contractor from achieving its planned progress should he/she not have known upfront (and therefore have been able to plan) whether he/she has to attend to the direct Contractors or when he/she has to have certain portions of work ready for them, or similarly which areas they would occupy space in.

A failure by the Employer shall result in the Contractor enjoying a right to submit a claim against the Employer for extension of time with cost if applicable in terms of clause 26.5 and 26.6 as any change to the information provided at the time the Contractor submitted its tender could result in a claim for delays, of course within reason; but that is for the Principal Agent to rule in terms of clause 26.7.

12.4.1.18 Incur the cost of completing a nominated subcontract due to default or insolvency of the nominated subcontractor, default by the Employer him/herself, or the Principal Agent and/or other agents (Clause 14.7.1)

The practice of the JBCC PBA 6.2 with the use of the nomination of subcontractors is certainly both an effective practice from a practical point of view (in limited instances by the Employer) in as much as it is a practice which assigns risks to the Employer aplenty and does in practice not always provide the Contractor with the required remedies to effectively manage delays by nominated subcontractors. Examples of such instances may be of retail developments which in South Africa typically open in autumn and spring – usually with fixed dates which are agreed between the Employer and all the tenants. These dates are set for a reason and delays cannot be afforded, as such should a

Contractor have a delay caused by a nominated subcontractor in such an instance the mechanism in the JBCC PBA 6.2 is of very little help and does not provide the Contractor with any remedy for its required acceleration.

Owing to the above the nomination of subcontractors poses significant risk to Contractors, the likes of which is required to be reviewed carefully and in detail – Contractors are well advised to use the mechanism in clause 14.2: "*…may refuse to appoint such subcontractor*", of course always within the ambit of the terms of the contract.

The obligation in terms of clause 14.7.1 is that the risk of the cost of completing a nominated subcontract owing to default or insolvency of the nominated subcontract is for the cost of the Employer him/herself. Technically the Contractor would be in breach if he/she were to complete the work (likely by way of another subcontractor doing the work) of the nominated subcontractor which subcontract has been terminated, all in accordance with clause 14.3: "*another subcontractor shall be nominated and appointed in accordance with a contract instruction issued by the Principal Agent*"

Failure by the Employer to incur such cost him/herself will create substantial problems, as the Contractor will not be able to complete the works and will hold the Employer liable for such time delayed and cost incurred in terms of clause 27.1.9: "*termination of a n/s agreement due to the default of the Employer, the Principal Agent and/or agents [14.7.1/15.7.1]*".

12.4.1.19 Incur the cost of completing a selected subcontract due to default by the Employer him/herself, or the Principal Agent and/or other agents (Clause 15.7.1)

If for whatever reason the Employer has been the cause of the selected subcontract (in relation to a specific provisional sum) being terminated, any variance in the cost of the original contract sum and the contract value (of course taking any contract instructions which may have been issued into consideration) shall be for the Employer's account.

Failure by the Employer to acknowledge such cost would result in the Contractor having the right to terminate in terms of clause 29.14.5: "*The Employer has failed to pay the amount certified…*" and as is confirmed in the judgement in the *Aveng Grinaker v MEC Department of Human Settlements (EL459/15) [2018] ZAECELLC 3; [2018] 3 All SA 466 (ECLD, East London) (5 June 2018)* case where the Employer is bound by the Principal Agent's payment certificate to pay the amount due.

12.4.1.20 Allow access for installation work by others (Clause 19.7)

On the issue of the certificate for practical completion one of the things that happens is that the Employer regains possession of the site. Accordingly, should the Principal Agent see the need (likely by way of an Employer requirement) for installations of whatever nature to be done by others, then the Employer is obliged to grant access to such installer(s).

Failure by the Employer to grant such access to others subsequent to practical completion would simply be to its disadvantage, as the total scope of the project would not be completed.

12.4.1.21 Consent to the jurisdiction of any court of law for the purpose of provisional sentence in relation to a payment certificate (Clause 25.17)

The Employer is obliged to act within the law of the country (as stated in the Contract Data), which in accordance with clause 25.17 applies to the payment certificate.

Failure by the Employer to pay the amount due by the due date gives the Contractor the right in terms of clause 28.1.3 to suspend the works, the result of such suspension shall be in terms of clause 28.4 which gives the Contractor the right to additional time and cost. The JBCC PBA 6.2 has a mechanism to overcome this issue by way of the payment guarantee which the Contractor can call on (of course only if the same was provided by the Employer) in order to obtain the moneys due.

Should the Employer not correct its default of non-payment to the Contractor, the Contractor has the right to terminate the agreement in terms of clause 29.14.5.

12.4.1.22 Notify the Contractor of its intension to terminate due to a specified default by the Contractor (Clause 29.2)

According to Segal (2018) the agreement can only be terminated on serious breach, the description of which is dealt with in: clauses 29.1.1 – failure to provide and maintain the guarantee for construction, 29.1.2 – failure to proceed with the works within the period stated and 29.1.3 – failing to comply with a contract instruction.

The Employer (or the Principal Agent on instruction from the Employer) has an obligation in terms of clause 29.2 to notify the Contractor of its intention to terminate the agreement for a specified default (in terms of clause 29.1.1-1.3), failing which the Employer does not enjoy the right to terminate.

12.4.1.23 Notify the Contractor of the Employer's recovery of damages from the Contractor (Clause 29.7)

The Employer is obliged to notify the Contractor of the recovery of damages as a result of the termination of the agreement, all in accordance with clause 25.3.7 – amounts due in the recovery statement and 27.1.3 – expense and or loss in terms of clause 27.2:

"27.2.1 Paying charges [2.1]

27.2.2 Effecting insurance due to the Contractor's default [10.0]

27.2.3 Work executed by others due to the Contractor's default [17.3]

27.2.4 Recoupment of advance payments [9.210; 11.3]

27.2.5 The Contractor not paying the amount due to the Employer [25.3. 7]

27.2.6 Termination of this agreement by the Employer [29.1]

27.2.7 Amounts paid directly to subcontractors on default by the Contractor [14.5; 15.5]

27.2.8 Termination of a subcontract agreement [14. 7.2; 15.7.2]

27.2.9 Default by the Contractor where not less than five (5) working days' notice detailing such default has been given before the issue of the next recovery, statement to allow the Contractor the opportunity to remedy such default"

Segal (2018) asserts that such notice includes for the additional cost of others completing the work.

Failure by the Employer to provide such notice will result in him/her losing its right to such recovery.

12.4.1.24 Recover from the Contractor, where applicable from the items listed (Clause 29.9)

The Employer has the right to recover such amounts (in the case of termination) that may be due from any one of the following under clause 29.9:

"The guarantee for construction (variable) —— until the final payment has been made;

Or: The guarantee for construction (fixed) until the date of practical completion;

Or: The payment redaction until the final payment is made;

The guarantee for advance payment until the outstanding balance has been repaid to the Employer"

The JBCC provides standard forms for all of the above guarantees, as such the Principal Agent is well advised to ensure that the guarantees provided are in fact submitted in terms of the standard forms, as the wording contained in the same provide the Employer with the necessary risk cover in the event that he/she may need to call on the same.

A failure by the Employer to call on the guarantees will simply result in it not recovering its damages which it has a right to.

12.4.1.25 Notify the Contractor of contemplation of termination (Clause 29.21)

In terms of the JBCC PBA 6.2 there are two reasons for which either of the contracting parties may terminate the agreement; these reasons are:

"*29.20.1: The works is for alterations and/or additions to (an) existing building(s), or a new building, which has been substantially destroyed regardless of the cause other than by the party seeking termination*

29.20.2: Progress on the works has ceased for a continuous period of ninety (90) calendar days, or an intermittent period totalling one hundred and twenty (120) calendar days as a result of a force majeure event or the exercise of statutory power by a body of state or public or local authority that directly affects the execution of the works"

Segal (2018) states that "*Such circumstances could include a strike for a lengthy period, the site being expropriated, or rejection of the plans by the local authority-on the grounds that the site was not zoned for the type of building being erected. The impossibility must be total impossibility and not merely that performance by one of the parties had become particularly difficult.*"

Should the Employer be the party contemplating terminating the agreement, he/she is obliged to give the Contractor 10 working days' notice, failing which the agreement will remain in place.

12.4.1.26 Inform the insurer and the Contractor of the termination of the agreement (Clause 29.21.2)

If the Employer is the party that was responsible for the insurance for the agreement, he/she is obliged inform the insurer of such termination. This is because the type of insurance cover will change on termination of the agreement, of course depending on the

types of insurance required (for example works insurance, free issue insurance, public liability insurance).

Failure by the Employer to inform the insurer may result in the Employer not being adequately covered for the risks he/she is exposed to subsequent to the termination of the agreement.

12.4.1.27 Arrange appropriate insurances to suit the stage of completion of the works (Clause 29.27)

Subsequent to the completion of the termination procedure as contemplated in clause 29.24: "*On termination of this agreement the Contractor shall:…*" and 29.25: "*On termination of this agreement the Principal Agent shall:…*" the Employer is obliged to arrange for appropriate insurance to suit the stage of completion (Segal, 2018).

Failure by the Employer to arrange for the appropriate insurance may result in the Employer not being adequately covered for the risks he/she is exposed to, based on the stage of completion subsequent to the termination of the agreement.

12.4.1.28 Notify the Contractor of referral of the dispute to adjudication (Clause 30.3)

According to Segal (2018) a growing number of contracts end up in disputes which require the dissolution of the dispute by way of either arbitration or the courts. This author was involved in a dispute which was ruled by him/herself as the adjudicator which was referred to the courts. The case in question is that of *Ekurhuleni West College v Segal and Another (26624/2017) [2018] ZAGPPHC 662 (29 August 2018)* where the applicant approached the court on the decision of the Adjudicator based on its dissatisfaction with the same, without following its contractual recourse in terms of the NEC clause W1.3(10) in referring its dissatisfaction to the Tribunal, which is similar to the provision in the PBA that the dissatisfied party refer the matter for arbitration in terms of clause 30.6.4.

In terms of clause 30.1 and affirmed by Segal (2018) the scope of the JBCC PBA 6.2 dispute resolution provision is wide and covers for any disagreement that may *"arise between the Employer (or the Principal Agent or an agent) and the Contractor arising out of or concerning the action or inaction of the Employer (or the Principal Agent and/or an agent) or the Contractor, or any other matter concerning this agreement (including the validity thereof), either party may give notice of a disagreement to the other. The parties shall attempt to resolve such disagreement between them and record such resolution in writing signed by them.*"

As stated in clause 30.2 if the disagreement is not resolved within 10 working days, the same shall be deemed to be a dispute. Segal (2018) asserts that the disagreement must be a "*genuine disagreement*" which involves different and conflicting points of view held by the parties to the contract; and not "*merely a failure by one of them to honour a contractual obligation*".

Should the Employer be the party that gave notice of the disagreement in the first place and the disagreement has not been resolved, then the Employer shall refer the dispute to adjudication by means of a notice of adjudication (in terms of clause 30.6.1 the adjudicator shall be nominated by the nominating body so stated in the Contract Data and shall be deemed to have been appointed by the parties).

A failure by the Employer to refer a disagreement which in terms of clause 30.2 is not resolved for dispute resolution by adjudication shall in terms of clause 30.5 "*cause the dispute to be resolved by arbitration and not by adjudication.*"

12.4.1.29 Include in the notice for adjudication the scope of the dispute and the relief sought by adjudication (Clause 30.4)

According to Segal (2018) "*adjudication is an accelerated form of dispute resolution in which a neutral person determines the dispute as an expert…whose determination is binding until overturned by an arbitration award.*"

Should the Employer be the party that gave notice of the disagreement in the first place and the disagreement has not been resolved, then the Employer shall include in the notice for adjudication the scope of the dispute and the relief sought by adjudication.

A failure by the Employer to include in the notice for adjudication the scope of the dispute and the relief sought by adjudication shall in terms of clause 30.5 "*cause the dispute to be resolved by arbitration and not by adjudication.*"

12.4.1.30 Agree the rules for arbitration with the Contractor and arbitrator if the applicable rules are not stated in the Contract Data (Clause 30.7.5)

The Contract Data clause B13.0 Dispute Resolution [30.0] requires for the details of the arbitration nominating body to be completed as well as for the applicable rules for arbitration to be stated. Segal (2018) holds that the following are typical rules: "*The Rules for the Conduct of Arbitrations, published by the Association of Arbitrators; or the rules devised by the Arbitration Foundation of South Africa or those of the Arbitration Forum, or even the Uniform Rules of the High Court.*"

Failure by the Employer to agree the rules for arbitration will result in the arbitrator deciding the rules for arbitration, all within the ambit of the Arbitration Act.

12.4.1.31 Notify the Contractor of the resumption of adjudication or arbitration proceedings (Clause 30.8.1)

If the Employer was the party that referred the dispute to either adjudication or arbitration (in terms of clause 30.6 and or 30.7) the Employer is at liberty to agree with the Contractor at any time during the same proceedings to refer to the dispute to mediation (in terms of clause 30.8). The requirement in clause 30.8.1 is simple in that if the Employer believes the mediation has little chance of success, he/she is obliged to notify the Contractor that either the adjudication or arbitration proceedings continue.

Failure by the Employer to notify the Contractor would ordinarily result in the mediation process continuing until such time as Segal (2018) states the mediator "*has the implied power to terminate the mediation proceedings at any time if he/she considers that there is little or no prospect of persuading the parties to reach a settlement…*"

12.4.1.32 Agree the appointment of a mediator, the procedure and the status of the outcome of mediation (Clause 30.8.2)

Other than for the adjudication and arbitration processes where the nominating body nominates an adjudicator or arbitrator the mediator is voluntarily chosen by the parties to resolve their dispute (Segal, 2018). When compared to the JBCC Rules for Adjudication there and the Arbitration Act there is no similar set of rules or legislation that is comparable with mediation, as such the parties are required and best advised to reduce such rules for the mediation to writing.

Failure by the Employer to be compliant in this regard will have the result that the mediation process will likely not be successful, and the dispute will likely have to be resolved by way of either adjudication or arbitration. This is likely to the detriment of any goodwill that the parties could have preserved through the mediation process (Segal, 2018).

12.4.1.33 Bear its own cost concerning mediation and equally share the cost of the mediator with the Contractor (Clause 30.8.3)

The requirement in this clause is simple in that the cost of the mediator is shared between the Employer and the Contractor and any and all costs that the Employer incurs in the mediation process is for its own account (Segal, 2018).

12.4.1.34 Continue to perform its obligations in terms of the agreement (Clause 30.11)

In terms of the clause 30.11 and according to Segal (2018) the parties and the Principal Agent continue as if the dispute has not happened; as such the operation of the contract effectively is required to continue, despite certain actions having been taken which the adjudicator's decision may revise. According to Segal (2018) and Evans (2017) an example of such a decision would for defective work to be corrected by the Contractor, but which the Contractor disputes, would still have to be corrected regardless of the fact that the matter is disputed.

12.4.2 Risks due to the obligations of the Principal Agent

12.4.2.1 Provide the Parties each with a copy of the original agreement (Clause 5.2)

According to Segal (2018) the JBCC PBA contract comes into life when the when the tender is accepted, with O'Connor (2017) asserting that acceptance may be demonstrated in several ways, that is either in writing, orally or through the parties' conduct; but that it is important for the parties to agree and "*clearly state the method of acceptance.*" Segal (2018) goes on to assert that there is no requirement for the parties to be in each other's presence when the contract is signed. In the case of the JBCC PBA the "original agreement" includes for the PBA, the duly completed Contract Data, the drawings, bills of quantities and any other documents which may have been so indicated in the Contract Data to be included in the agreement, these may include inter alia the construction guarantee, waiver of lien and so on.

The Principal Agent shall hold the original agreement and provide each of the parties with a copy of the original agreement, and specifically so to the Contractor free of charge. There is no specific remedy in the PBA for a scenario where the Principal Agent does not perform this obligation, however the parties will likely demand such a copy as proof of their entering into a contract.

12.4.2.2 Hold the original signed agreement (Clause 5.2)

This obligation is clear on the principal that he/she keeps the original signed agreement, however it must be said that in practice my experience is that the scenario often plays itself out where the Employer insists on keeping the original signed agreement, with an specific situation being that a certain Employer insisted on having two agreements signed; one for him/herself and the other for the Contractor, with the Principal Agent

being provided with a copy of one of these. Obviously, this is not aligned with the terms of the agreement, but is likely an area that the Principal Agent ought to understand its client's (the Employer) procurement processes prior to tendering the work, so as to ensure that if a deviation of this clause is required it be so recorded in the tender documentation already. The Contract Data makes provision for this requirement to be changed in B4.0 Documents, where the Principal Agent can complete at tender stage already which party or agent will hold the original agreement.

12.4.2.3 Provide copies of drawings, bills of quantities and other construction information (Clause 5.6)

Contract drawings is defined in the PBA as: "*The drawings listed [CD]*"

Construction information is defined in the PBA as: "*All information issued by the Principal Agent and/or agents including this agreement, specifications, drawings, schedules, notices and contract instructions required for the execution of the works*"

In the Contract Data B4.0 Documents the number of copies of drawings, bills of quantities and other construction documentation that the Principal Agent provides to the Contractor at no cost to the Contractor is stated. Should the Contractor require any copies to the number provided in terms of the Contract Data the same will be charged for by the Principal Agent (likely to the Employer who in turn will charge the Contractor for the same).

A failure by the Principal Agent to provide the Contractor with the drawings and other construction information at the time required or at all may ordinarily lead to a claim for extension of time and cost, all in accordance with clause 23.2.5: "*late or incorrect issue of construction information.*"

12.4.2.4 Notify the Contractor of delegation of authority (Clause 6.2)

According to Segal (2018) the Employer surrenders a number of its contractual rights to the Principal Agent, some of which include: the right to approve work (clause 21.12), the ordering of additional work (clause 17.1.2) or to determine the value of variations. However in saying that the Principal Agent is in no position to judge all of these matters, as he/she is not an expert in the fields of Engineering or quantity surveying as examples, as such the agreements provides for the right to the Principal Agent to delegate certain of its duties to another agent, subject of course to the notification of the same to the Contractor. Note though that those agents who have received such delegation may not delegate the same right to another without the prior written consent of the Employer and

on notice to the Contractor. Segal (2018) further asserts that in terms of clause 6.1 such delegation does not grant any delegated agent with the authority to bind the Employer in terms of the agreement.

Failure by the Principal Agent to notify the Contractor of such delegation of authority will ordinarily result in the delegation of being of no force or effect, as the Contractor does not enjoy its right to such knowledge and is accordingly not obliged to pay any mind to instructions from such delegated agents until the notice delegating authority is received from the Principal Agent. It would be prudent of the Principal Agent to include in the notice to the Contractor exactly what the limitations of the delegation to the delegated agent are so as to ensure that there is certainty as to what the powers of such delegated agent are and what instructions the Contractor is obliged to follow.

12.4.2.5 Declare conflict of interest (Clause 6.3)

In terms clause 6.3 the Principal Agent is required to declare any interest in the works or project other than that of its professional appointment, with the Contract Data in B5.0 Employer's Agents providing the space for such information to be furnished at tender stage already. Cousins (2016) is agreeable to the fact than an agent of the Employer has a duty to avoid such conflict of interest. Other than simply stating an interest in the project it is far better for the Principal Agent not to have any interest other than its professional interest in the project, as it is quite likely that its judgement may at some point be clouded by its conflicting interest.

In the case of *Costain v Bechtel [2005] EWHC 1018* the judge ruled that it is in fact the Project Manager's (in the case of the JBCC PBA the Principal Agent) duty to act fairly and impartially in matters of assessment and certification; thereby balancing the rights between the Employer and the Contractor.

A failure by the Principal Agent to notify may result in him/her failing to act in terms of the contract (by way of clause 6.4), the result of which is that the Contractor may give notice to suspend the Works in terms of clause 28.0.

12.4.2.6 Determine the cost of making good physical loss or repairing damage for the listed reasons where the Contractor is not responsible (Clause 8.6)

There are in terms of clause 8.5 several reasons where the Contractor shall "*not be liable for the cost of making good physical loss and repairing physical damage to the works*", these are listed as:

"8.5.1 The use or occupation of any part of the works by the Employer, the Employer's employees and/or agents and those for whose actions they are responsible

8.5.2 An act or omission of the Employer, the Employer's employees or agents and those for whose acts they are responsible

8.5.3 An act or omission by a direct Contractor;

8.5.4 The use or occupation of any part of the works by a direct Contractor

8.5.5 The design of the works for which the Contractor is not responsible [7.1]

8.5.6 A defect in free issue or materials and goods specified by tradename where the Contractor has no right of substitution. The Contractor hereby cedes any right of action to the Employer that may exist against the supplier and/or manufacturer of such free issue, and/or materials and goods '

8.5.7 Force majeure."

The requirement in this clause 8.6 is one where the Principal Agent is likely to delegate its authority to the quantity surveyor in order to determine the value of making good loss or repairing physical damage in terms of the reasons stated. This value will ordinarily include for direct costs related to the works, as well as for indirect costs related to the supervision and time charges related to such loss or damage. The value related to the same is added to the contract value by way of a contract instruction in terms of clause 17.1.10 and grants the Contractor an extension to the date for completion as well as for additional cost in terms of clause 23.2.2: "*making good…where the Contractor is not at risk*". In terms of clause 26.7 the assessment of such value shall be fair.

Failure by the Principal Agent to act in terms of clause 26.7 gives the Contractor the right in terms of clause 30.1 to give notice of the disagreement, which failing to be resolved in terms of clause 30.2 in ten working days shall be declared a dispute and shall either be referred to adjudication in terms of clause 30.3 or failing which to arbitration in terms of clause 30.5.

12.4.2.7 Certify recoupment of the advance payment (Clause 11.3)

An advance payment provision is made for in most international standard form contracts (Greenhalgh, 2017) with the JBCC PBA 6.2 being no different. The purpose of the advance payment is typically to assist the Contractor with its mobilisation and set-up costs (Greenhalgh, 2017), but could also be for the purchasing of goods and materials that cannot yet be delivered to site and the rights to which cannot yet be transferred to the

Employer (Segal, 2018). The guarantee is typically provided by a bank or financial institution and is paid back after a certain period over time typically in equal increments as the work progresses (Greenhalgh, 2017). Should the Contractor default or if the contract is terminated the bank or financial institution pays the balance remaining on the guarantee to the Employer (Cartlidge, 2015), (Mason, 2016), (O'Connor, 2017).

The certification of an advance shall only take place on receipt of an advance payment guarantee in terms of clause 11.2.2, with the requirement being that the Contractor keep the guarantee valid and enforceable until the advance is repaid, with clause 11.3 stating that the amount of the same guarantee reducing by the amount the Contractor repays which is the recoupment certified by the Principal Agent.

As part of the suite of documents that the JBCC issue, they provide for an advance payment guarantee standard form that can be completed by a guarantor, as is shown in Figure 32 this standard document provides for

1. a field where the number of recoveries (in months) the guarantee is to be recovered in is stated,
2. when the commencement of the recoveries commences, as well as
3. the monthly recoupment amount.

Recoupment period	(no. of months)	
Recoupment period commencement	(start month)	
Monthly recoupment	(amount)	
Note: Where the recoupment amounts and/or periods are irregular a schedule of recoupment amounts and dates must be attached		

Figure 32 - JBCC Guarantee for Advance Payment particulars

The onus is on the Principal Agent to certify the recoupments, this is because the guaranteed amount diminishes as the recoupments ought to be deducted, failing which the Employer may no longer be covered (in the event of default by the Contractor, or termination) for the full advance amount paid. This is likely to give rise a professional indemnity claim against the Principal Agent, as he/she did not fulfil its obligation in terms of the contract. This is reflected in the Figure 33 below:

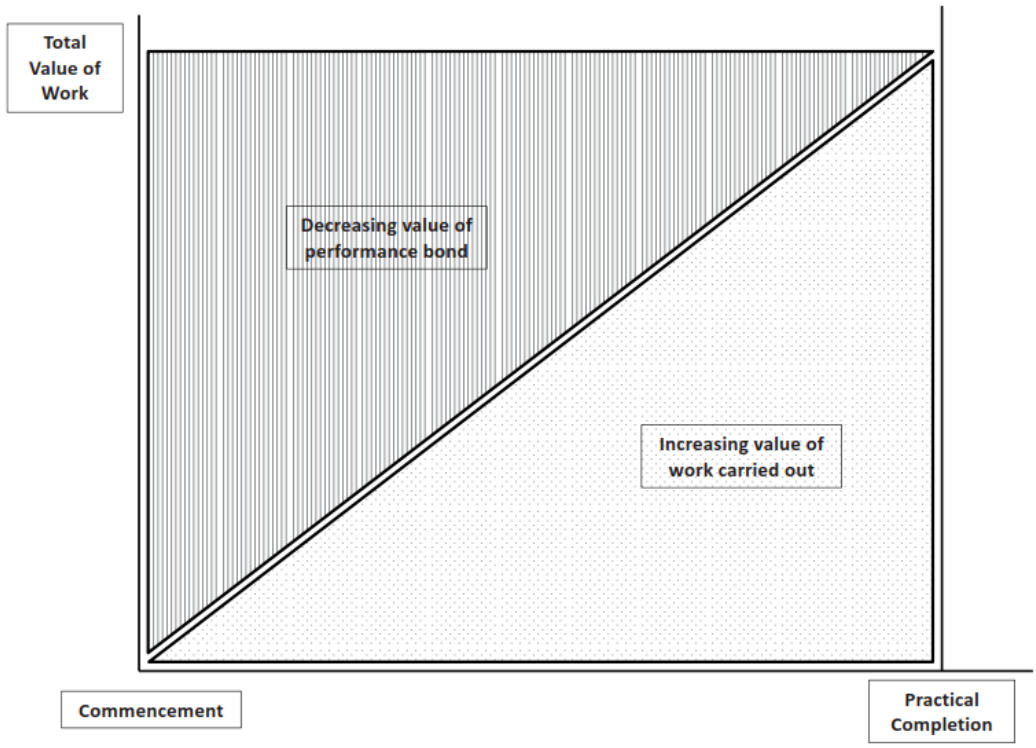


Figure 33 - Decreasing value of advance payment / advance payment guarantee (Greenhalgh, 2017)

12.4.2.8 Monitor progress of the works (Clause 12.2.6)

Of the core principals of project management of: time, cost and quality, Cook (2014) argues that for the Employer time is the most important, as the Employer is the party that is likely to suffer reputational damage, as well as financial losses.

The purpose behind this obligation on the Principal Agent is nothing other than for him/her to monitor the progress of the works as compared to the Contractor's detailed baseline programme, however there is very little if any real recourse for the Principal Agent if the Contractor does not follow its programme. The PBA requires in terms of clause 12.2.7 the Contractor to "*proceed with due diligence, regularity, expedition, skill and appropriate physical resources to bring the works to practical completion*" –with the intention here being that the obligation is on the Contractor to show how he/she will bring the works to practical completion (Segal, 2018).

The PBA includes in clause 12.2.6 for the provision that the Contractor is required to submit the programme to the "*Principal Agent within fifteen (15) working days of receipt of construction information*". The PBA defines construction information as follows: "*All information issued by the Principal Agent and/or agents including this agreement, specifications, drawings, schedules, notices and contract instructions required for the execution of the works.*" On a technicality the Contractor would thus not be obliged to

submit and can likely not technically be held to its programme until such time as all of the above information required for the programme has been issued to him/her – this is in fact a substantial problem, as it is my own experience that a Contractor has in fact used this exact principle as the argument for him/her not submitting a fully detailed programme and refusing for the principal to monitor progress against it, as he/she has not received all drawings, all specifications, nor all contract instructions until the project is complete.

Segal (2018) argues that in terms of the PBA the Principal Agent has no obligation to approve the programme submitted to him/her, and even if he/she does approve it, the approval does not vary the legal obligation of the parties. This is contrary to the NEC4 ECC which in clause 11.2(1) allows for the Project Manager to accept the programme, which according to Egglestone (2006) becomes one of the cornerstones of the contract.

A failure by the Principal Agent to monitor the progress of the works has no contractual ramification, however the Employer will likely have a case for a claim against the Principal Agent if he/she did not monitor whether the Contractor proceeds "*with due diligence, regularity, expedition, skill and appropriate physical resources to bring the works to practical completion*".

12.4.2.9 Hold regular meetings to monitor the progress of the works (Clause 12.3)

As part of the Principal Agent's duties he/she is required to conduct and chair site progress meetings, which according to Cartlidge (2015) could have the following agenda (specifically for ongoing meetings):

"*1 A review of:*

- *the construction schedule,*
- *relevant quality issues, and*
- *costs and overall budget.*

2 Construction activity issues.

3 Unanticipated delays.

4 Design clarifications.

5 Contract variations / owner's concerns.

6 Unforeseen extra work.

7 Health and safety matters."

A failure by the Principal Agent to hold regular meetings to monitor the progress of the works has no contractual ramification, however the Employer will likely have a case for a claim against the Principal Agent if he/she did not monitor whether the Contractor proceeds "*with due diligence, regularity, expedition, skill and appropriate physical resources to bring the works to practical completion*".

12.4.2.10 Record and timeously distribute minutes of such meetings (Clause 12.3)

The Principal Agent and the Contractor hold regular meetings to monitor the progress of the works, with the responsibility of recording such meetings being that of the Principal Agent, who in terms of clause 12.3 is responsible for issuing the minutes of meeting related to these progress meetings.

A failure by the principal to record such meetings by way of minutes of meetings may result in the Employer taking the Principal Agent to task under the professional service appointment the Principal Agent is appointed on.

12.4.2.11 Instruct the Contractor indicating how to proceed with the works (Clause 13.2.4)

In terms of this clause 13.2.4 the principal has the obligation to instruct the Contractor how to proceed with the works in the event that an object of value or of historical or other interest found within the site, which in accordance with clause 23.2.3 gives the Contractor the right to claim for additional time and cost. In accordance with the contract the Contractor does not have any title to an object of value or of historical or other interest within the site and does not move the object without the required instruction from the Project Manager.

Failure by the Principal Agent to instruct the Contractor how to deal with such an item will likely result in a dispute in terms of clause 30.1.

12.4.2.12 Prepare tender documents for nominated subcontractors (Clause 14.1.1)

According to Segal (2018) Contractors tend to focus on the so called 'wet trades', which consist mainly of concrete work, brick work and plastering; whereas the specialist trades and finishing trades are subcontracted to specialists. In the case of the JBCC there are three classes of subcontracts: domestic subcontracts (those subcontracts which carried out as if by the Contractor him/herself under its own terms and conditions), nominated subcontracts (those subcontracts which the Employer essentially instructs (nominates) the Contractor to use a specific subcontractor of the Employer's choice and under the JBCC

n/s (nominated / selected) subcontract document) (Construction Industry Development Board (CIDB), 2007) (for further reading on what constitutes a nominated subcontract the case of *Minister of Public Works and Land Affairs v Group Five Building Ltd [1999] 3 All SA 467 (A)* refers); and selected subcontracts (those subcontracts which the Employer and the Contractor agree on a list of specialist subcontractors to call tenders from under the JBCC n/s (nominated / selected) subcontract document) (Construction Industry Development Board (CIDB), 2007).

Without deviating too far from the purpose of the research report it is prudent to summarise the differences between nominated and selected subcontracts (in Table 31), note thought that any further in-depth analysis of what each of these subcontracts are (or are not) is beyond the scope of this report.

Table 31 - JBCC PBA 6.2 Nominated and Selected subcontract compared (The Joint Buildings Contracts Committee (JBCC), 2018)

Nominated subcontract (clause 14)		**Selected subcontract (clause 15)**	
14.1.1	Principal Agent prepares tender documents	15.1.1	Principal Agent prepares tender documents in consultation with Contractor and reasonable approval of the Contractor
14.1.2	Principal Agent calls for tenders	15.1.2	Principal Agent calls for tenders from a list of tenderers agreed by the Contractor and Principal Agent
14.1.3	Principal Agent scrutinises tenders in consultation with Contractor	15.1.3	Principal Agent scrutinises tenders in consultation with Contractor
14.1.4	Principal Agent nominates subcontractor and instructs Contractor to appoint such subcontractor	15.1.4	Principal Agent in consultation with the Contractor choose the compliant tenderer
14.6	Principal Agent instructs Contractor to notify defaulting / or declared insolvent subcontractor to rectify default. Principal Agent instructs Contractor to terminate subcontract should default continue another 5 days	15.6	Decision whether or not to terminate when the subcontractor defaults is entirely that of the Contractor
14.7	Termination:	15.7	Termination:

14.7.1	Variation of cost of completing subcontractor is for the Employers account due to: *default or insolvency of subcontractor*, default of the Employer, the Principal Agent/agents	15.7.1	Variation of cost of completing subcontractor is for the Employers account due to: default of the Employer, the Principal Agent/agents
14.7.2	Employer may recover expense and/or loss for additional cost of completing subcontract works where the Contractor defaults or is declared insolvent	15.7.2	Any variation in the cost of completing subcontract works is for the account of the Contractor, except when: default of Employer, Principal Agent and/or agents
14.7.3	Principal Agent issues instruction to the Contractor to appoint another subcontractor to complete the subcontract works	15.7.3	Principal Agent issues instruction to the Contractor to appoint another subcontractor to complete the subcontract works

In the case of nominated subcontracts, the Employer through the Principal Agent calls for tenders (in terms of clause 14.1.2) which tender documents have been prepared in conformity to the JBCC n/s (nominated / selected) subcontract document by the Principal Agent (in terms of clause 14.1.1). The Principal Agent also receives these tenders and scrutinises (in terms of clause 14.1.3) the received nominated subcontract tenders for compliance, however this is not an activity that the Principal Agent does on its own (as is my experience in practice) – the PBA calls for the Principal Agent to do this in consultation with the Contractor (the Contractor may after all refuse to appoint a nominated subcontractor for the reasons stated in clause 14.2), as the Contractor may have a reasonable objection to a specific nominated and has the right to refuse such appointment in terms of clause 14.2.1.

Subsequent to having scrutinised the tenders with the Contractor, the Principal Agent recommends to the Employer the subcontractor for appointment (Segal, 2018) and subsequent to approval from the Employer instructs the Contractor in terms of clause 14.1.4, 14.4 and 17.1.14 to appoint the nominated subcontractor.

Failure by the Principal Agent to effect this process timeously (in terms of the Contractor's programme and the information required schedule (refer to clause 12.2.11) gives the Contractor the right to a claim for extension of time and related cost in terms of clause 23.2.3.

12.4.2.13 Call for nominated subcontract tenders (Clause 14.1.2)

Refer to 12.4.2.12.

12.4.2.14 Scrutinise the received nominated subcontract tenders for compliance in consultation with the Contractor (Clause 14.1.3)

Refer to 12.4.2.12.

12.4.2.15 Instruct the Contractor to appoint a nominated subcontractor (Clause 14.1.4)

Refer to 12.4.2.12.

12.4.2.16 Certify direct payment to a nominated subcontractor on instruction from the Employer (Clause 14.5)

The Contractor is required to pay the nominated subcontractor in terms of clause 14.4.5 the amount certified on the dated stated in the n/s subcontract Contract Data and provide the proof of payment related to the same in terms of clause 14.5 within five (5) working days to the subcontractor (on notice from the Principal Agent that the same is required). Failure by the Contractor to provide such proof gives the Employer the right to pay the subcontractor directly on certification of the same to the subcontractor and to recover the same amount from the Contractor in terms of clause 27.2.7.

Failure by the Principal Agent to issue such instruction by the Employer may ordinarily occasion the subcontractor to suspend the subcontract works (in terms of clause 25.13.1 of the n/s agreement), the result of which could ultimately lead to delays being incurred by the Contractor – which does not benefit the project, as such the Employer.

12.4.2.17 Instruct the Contractor to notify a nominated subcontractor of continued default (Clause 14.6)

In a way the system explained in clause 14.6 goes to show the curious relationship between the Employer, the Principal Agent, the Contractor and the nominated subcontractor; where the Employer nor the Principal Agent has any contractual nexus with the nominated subcontractor, but are deeply rooted in the dealings with the nominated subcontractor – to such an extent that they are the parties (by way of the Employer's decision) and the Principal Agent's notice to terminate such subcontract between the Contractor and its appointed nominated subcontractor.

Failure by the Principal Agent to fulfil this obligation would ordinarily leave the Employer in a worse position, as the Contractor is obliged to act on the Principal Agent's notification to the Contractor to act when it comes to the nominated subcontractor's default (and the risk of the additional time and related cost being that of the Employer; refer to clauses 14.7.1 and 23.2.11).

12.4.2.18 Prepare tender documents for selected subcontractors (Clause 15.1.1)

The requirement in terms of clause 15.1.1 is the same as for 14.1.1 on the Principal Agent, with the exception that he/she has to consult the Contractor on the tender documents and crucially has to gain approval from the Contractor on the tender document (though it has to be mentioned that during the course of my career I have yet to come across a selected subcontract document which was issued to the Contractor by the Principal Agent for approval…).

Failure by the Principal Agent (or its duly delegated agent, as it is my experience that the Quantity Surveyor more often than not fulfils this role) to fulfil this function timeously will grant the Contractor with a right to additional time and related cost in terms of clause 23.2.7: "*Late appointment of a subcontractor in terms of the agreed programme…*".

12.4.2.19 Call for selected subcontract tenders (Clause 15.1.2)

Refer to 12.4.2.12, with the difference being that the list of tenderers has to be agreed by the Contractor and the Principal Agent (Segal, 2018).

12.4.2.20 Scrutinise the received selected subcontract tenders for compliance in consultation with the Contractor (Clause 15.1.3)

Refer to 12.4.2.12, with the difference being that the Principal Agent is required to consult the Contractor on this matter (Segal, 2018).

12.4.2.21 In consultation with the Contractor choose the compliant tenderer for appointment as a selected subcontractor (Clause 15.1.4)

Refer to 12.4.2.12, with the difference being that the Principal Agent is required to consult the Contractor on this matter (Segal, 2018).

12.4.2.22 Certify direct payment to a selected subcontractor on instruction from the Employer (Clause 15.5)

Refer to 12.4.2.16, but for a selected subcontractor.

12.4.2.23 Instruct the Contractor to appoint another subcontractor if the Contractor terminates a selected subcontract (Clause 15.7.3)

Following the termination of a selected subcontractor the Principal Agent is required to instruct the Contractor to appoint a new subcontractor for the completion of the subcontract works. This is owing to the fact that the Principal Agent instructed the Contractor to appoint the selected subcontractor in the first place, as such it is likely that the Principal Agent will instruct the Contractor to appoint the next best (in terms of the tenders originally received) subcontractor for the completion of the subcontract works – remembering of course that the additional cost related to such completion of the works is for the Contractor, except where the Employer, its Principal Agent and / or other agents were in default. In such a case the Contractor would ordinarily call on the security provided by the subcontractor in order to recover such additional costs.

Failure by the Principal Agent would result in the Contractor enjoying the right to claim for additional time and cost in terms of clause 23.2.7: "*late appointment of a subcontractor…*"

12.4.2.24 Issue completion certificates for sectional completion (Clause 20.2)

Refer to 4.2.2.4, with the exception that the same is for sectional completion and not for the works as a whole.

12.4.2.25 Notify the Contractor of outstanding items on the list for completion (Clause 21.4)

The list for completion is defined as follows in the PBA: "*A list that may include marked up drawings and photographs issued by the Principal Agent where practical completion has been certified, listing defects and/or outstanding work to be completed*"

A defect is defined as follows in the PBA: "*any aspect of materials and workmanship forming part of the works that does not conform to the agreement and/or construction information*", however Segal (2018) asserts that in accordance with clause 7 these defects do not extend to defects that may arise due to the design by the Principal Agent or others.

In accordance with clause 21.1 the defects liability period commences the day after practical completion has been certified by the Principal Agent, however there may be minor defects which the Contractor is required to remedy, these are reflected on the list for completion as contemplated in clause 19.3.4. Note that in terms of clause 21.1 the

defects liability period ends 90 days after practical completion or on the date when the items on the list for completion have been satisfactorily dealt with; whichever is the later.

In terms of this clause 21.4 the Principal Agent is obliged to give notice to the Contractor in terms of clause 17.1.12 to attend to the items on the list for completion where the Contractor has not attended to the same.

Failure by the Principal Agent to issue such list for completion will result in the Contractor enjoying the right of the defects liability period lapsing 90 days after the date for practical completion in terms of clause 21.1. It is of interest that there is no specific clause dealing with non-action by the Principal Agent in this regard, however clause 21.9 deals with the Principal Agent not giving its required notice required on the list for final completion, with the final result being that the Contractor achieves final completion after certain processes have completed as a result of the inaction of the Principal Agent.

12.4.2.26 Inspect the works following notification from the Contractor that the outstanding items on the list for completion have been attended to (Clause 21.5)

The requirement in terms of this clause 21.5 is simple in that the Principal Agent is required to inspect the works within 5 working days from receiving the notice from the Contractor that the outstanding items on the list for completion have been attended to.

Failure by the Principal Agent to issue such list for completion will result in the Contractor enjoying the right of the defects liability period lapsing 90 days after the date for practical completion in terms of clause 21.1. It is of interest that there is no specific clause dealing with non-action by the Principal Agent in this regard, however clause 21.9 deals with the Principal Agent not giving its required notice required on the list for final completion, with the final result being that the Contractor achieves final completion after certain processes have completed as a result of the inaction of the Principal Agent.

12.4.2.27 Inspect the works for defects (Clause 21.6)

Following the 90 day defects liability period coming to an end, or on notice from the Contractor that all of the items on the list for completion have been attended to, the Principal Agent is obliged to inspect the works for the purpose of either issuing a list for final completion in terms of clause 21.6.1 or the certificate of final completion in terms of clause 21.6.2.

The certificate of final completion is defined as follows in the PBA: "*A certificate issued by the Principal Agent to the Contractor with a copy to the Employer stating the date on which final completion of the works, or a section thereof, was achieved*"

Failure by the Principal Agent to inspect the works for defects will result in the Contractor enjoying the right of the defects liability period lapsing 90 days after the date for practical completion in terms of clause 21.1. It is of interest that there is no specific clause dealing with non-action by the Principal Agent in this regard, however clause 21.9 deals with the Principal Agent not giving its required notice required on the list for final completion, with the final result being that the Contractor achieves final completion after certain processes have completed as a result of the inaction of the Principal Agent.

12.4.2.28 Notify the Contractor of status of defect correction related to list for final completion (Clause 21.7.3)

Refer to 12.4.2.26, but for the list for final completion.

12.4.2.29 Issue certificate of final completion (Clause 21.8)

The Principal Agent is required under clause 21.8 to forthwith issue the certificate of final completion on completion by the Contractor of all items on the list for final completion, or if applicable on the updated list for final completion.

Segal (2018) confirms that the certificate for final completion conveys that the Contractor's responsibilities have been completed, with the exception of latent defects in terms of clause 22.1, which ends five (5) years after final completion – as such the Principal Agent is required to ensure that each and every room, finish, fitting and all works are complete and free from patent defects in order to issue the certificate of practical completion.

The result of the issue of the certificate in terms of the PBA is listed as follows:

i. In terms of clause 12.2.20 and 21.11 the Contractor cedes any guarantees, product warrantees or indemnities pertaining to the works on the date of issue of the certificate of final completion;
ii. In terms of clause 21.10.1 the Contractor's obligations and liability concerning a subcontractor ends where the subcontractor's defects liability period extends beyond the Contractor's defects liability period, with the remaining period of the subcontractor's defects liability period being ceded to the Employer in terms of clause 21.10.2;

iii. In terms of clause 25.15 the Principal Agent issues the final payment certificate.

Failure by the Principal Agent to issue the certificate for final completion will result in the Contractor enjoying the right in terms of clause 21.9 that the Contractor is deemed to have achieved final completion after certain processes have completed as a result of the inaction of the Principal Agent.

12.4.2.30 Determine the penalty (Clause 24.2)

The Employer has every right to levy the penalty per day stated in the Contract Data if the Contractor fails in terms of clause 24.1 to bring the work to practical completion by the date for completion or revised date for practical completion. This penalty is levied in terms of the contract and is done in lieu of a determination of damages suffered, as Segal (2018) confirms that the determination of such damages is very difficult; accordingly building contracts rely on penalties for late completion. In South Africa such penalties are charged in accordance with The Conventional Penalties Act 15 of 1962 .

The Principal Agent has no right to determine whether the penalty ought to be levied or not and relies on the instruction of the Employer to levy such penalty; following which the Principal Agent is required to determine the amount due to the Employer. The amount due is calculated until either the actual or deemed date for practical completion (in terms of clause 24.2.1) or the date of termination (in terms of clause 24.2.2).

Failure by the Principal Agent to fulfil this obligation is a financial risk to the Employer and may result in the Employer taking the Principal Agent to task under the professional service appointment the Principal Agent is appointed on.

12.4.2.31 Include the penalty in regular interim payment certificates (Clause 24.3)

The requirement in terms of this clause 24.3 is simple that the Principal Agent is obliged to include the penalty (as instructed by the Employer in terms of 24.1) in each following payment certificate by showing the same in the recovery statement as is required in terms of clause 27.1.1.

Failure by the Principal Agent to fulfil this obligation is a financial risk to the Employer and may result in the Employer taking the Principal Agent to task under the professional service appointment the Principal Agent is appointed on.

12.4.2.32 Prepare cash flow statements (Clause 25.1)

It is highly likely that the Principal Agent will delegate this obligation to the Quantity Surveyor in terms of clause 6.2. The Contractor has in fact also got an obligation in terms of this clause 25.1 in that it is required to assist in the forecasting of future cash flows. In practice this is quite a difficult task to perform with accuracy, as the programme and the bills of quantities are in my experience often not based on a single work breakdown structure prepared for the project; as such the information is not presented on the same level and the reporting of future cash flows is based on formulae and guestimates. Depending on the requirement from the Employer the cash flow is either relied on heavily in order to draw from the shareholders and/or lenders a sufficient amount to effect payment to the Contractor; or as is often the case in my experience the Employer relies on the Quantity Surveyor's assessment of the work done before the draw is made.

Failure by the Principal Agent to fulfil this obligation is a financial risk to the Employer (as it may not have sufficient funds to pay the Contractor) and may result in the Employer taking the Principal Agent to task under the professional service appointment the Principal Agent is appointed on.

12.4.2.33 Make a fair estimate of the work completed (Clause 25.1)

It is highly likely that the Principal Agent will delegate this obligation to the Quantity Surveyor in terms of clause 6.2.

If the Contractor has not provided to the Principal Agent all required documents and quantified amounts of work executed the Principal Agent is obliged in terms of clause 25.1 to make a fair estimate of the work completed.

According to Segal (2018) the building contract, which is a *locatio conducto operis* (the letting and hiring of work) the payment of interim payment certificates is a deviation from the common law principal of the payment being effected when the work is done, however construction contracts typically addresses this issue, as the Contractors do not necessarily have the cash at hand to fund the entire construction contract for the Employer only to be paid at the end. This does however not mean that the work has been accepted or to the required standard.

This fair estimate of the work done is based on the date for the valuation which is stated in the Contract Data. In the case of *Costain v Bechtel [2005] EWHC 1018* the judge ruled that it is in fact the Project Manager's (in the case of the PBA the Principal Agent) duty to act fairly and impartially in matters of assessment and certification; thereby balancing the

rights between the Employer and the Contractor. Segal (2018) highlights that the estimate prepared by the Principal Agent is required to include for the value of work done by subcontractors and materials and goods supplied by them.

There is no express right that the Contractor has in terms of the contract if the Principal Agent does not make a fair estimate, however this may lead to a dispute where the Contractor may exercise its rights in terms of clause 30.1 to declare a dispute in order to argue its case to force the Principal Agent to make a fair assessment of the claim submitted.

12.4.2.34 Issue the statements, notifications and calculations listed (Clause 25.7)

Again, it is highly likely that the Principal Agent will delegate this obligation to the Quantity Surveyor in terms of clause 6.2.

The Principal Agent is obliged to issue with each payment certificate the following notifications, documents, calculations and the like:

"*25.7.1 To the Employer and the Contractor a recovery statement showing the amounts due to either party in the current payment certificate*

25.7.2 To the Contractor a statement showing the amount certified for each subcontractor

25.7.3 To each subcontractor a n/s subcontract payment notification showing the amount included in the payment certificate and its date of issue

25.7.4 The determination of default interest

25.7.5 The determination of compensatory interest"

These requirements are relatively self-explanatory, with definitions being provided in the PBA for the following:

Recovery statement: "*The statement prepared and issued in conjunction with each payment certificate by the Principal Agent in terms of the JBCC Recovery Statement format*"

Default interest: "*Interest at six (6) percentage points per annum above the ruling rate of interest where payment has not been received within the stipulated period, compounded monthly from the due date for payment until the date for payment*"

Compensatory interest: "*Interest due to the Contractor at the ruling rate of interest on amounts certified after thirty-one (31) calendar days of the date for practical completion, compounded monthly until the date of payment*"

The PBA is silent as to what right the Contractor has if the Principal Agent fails to fulfil his/her obligation in this regard, however there may be repercussions if say clause 25.7.2 and 25.7.3 are not abided by, as the subcontractors may wish to claim against the Contractor – who in turn is likely to submit a claim against the Employer in terms of clause 6.4 and give notice to suspend the works in terms of clause 28.0

12.4.2.35 Revise the date for practical completion on resumption of the works subsequent to suspension by the Contractor (Clause 28.4)

The Contractor enjoys the right to suspend the works for several Employer obligations which haven't been met; these are listed in clause 28.1 as follows:

"*28.1.1 Provide and/or maintain a guarantee for payment, where required [11.5-6]*

28.1.2 Issue a payment certificate by the due date [25.2] [CD]

28.1.3 Make payment in full of an amount certified in an interim payment certificate by the due date [25.10] [CD]

28.1.4 Effect insurances [10.1.1—5; 10.2] where applicable [CD]

28.1.5 Appoint another Principal Agent and/or another agent, where applicable [6.5] or where an agent has failed to act in terms of delegated authority [6.4]"

On resumption of the works the Principal Agent is obliged to revise the date for practical completion, with an associated adjustment of the contract value. According to Segal (2018) no previous version of the PBA gave the contract the right to suspend the works, regardless of whether the Employer or its agents have not met their respective obligations. The clause is writ in a fashion where the Employer can rectify the default in terms of the reasons stated, as the Contractor is required to give the Employer ten (10) working days' notice of its intention to suspend the works.

Failure by the Principal Agent to revise the date for practical completion with an adjustment to the contract value will result in him/her failing to act in terms of the contract, the result of which is likely a notice of disagreement in terms of clause 30.1.

12.4.2.36 Adjust the contract value on resumption of the works subsequent to suspension by the Contractor (Clause 28.4)

Refer to 12.4.2.35. The adjustment of the contract value is likely to be in line with the requirement that the Principal Agent must make a fair assessment of a claim submitted, as such refer to 4.2.2.12

12.4.2.37 Notify the Contractor of the Employer's intention to terminate if the Employer instructs the Principal Agent to do so (Clause 29.2)

The requirement for the Principal Agent to give notice to the Contractor that the Employer is contemplating terminating the agreement is not a right that the Principal Agent has without express instruction from the Employer.

The reasons for the Employer to give notice (if it so elects through the Principal Agent) to the Contractor of its intention to terminate the agreement, are where the Contractor has failed as listed in clause 29.1 to:

"*29.1.1 Provide and maintain a guarantee for construction [CD]*

29.1.2 Proceed with the works [12.2.7]

29.1.3 Comply timeously with a contract instruction [17.0]"

From the time the Contractor is notified of the Employer's intention to terminate the agreement it has ten (10) working days to rectify such default.

A failure by the Principal Agent to follow the Employer's instruction to give notice to the Contractor of its intention to terminate the agreement will likely have repercussions for the Principal Agent in terms of its professional services contract, however in terms of the PBA the Employer has every right to serve such notice to the Contractor him/herself.

12.4.2.38 Notify the Contractor to remove surplus materials and goods from the site (Clause 29.24.3)

As part of the termination procedure imposed on the parties in terms of clause 29.4, Segal (2018) confirms that the Principal Agent is required in terms of this clause 29.24.3 notify the Contractor to remove surplus materials and goods from site. Such 'materials and goods' is defined in the PBA as follows: "*Unfixed materials, goods and/or items fabricated for inclusion in the works whether stored on or off the site or in transit*".

This notice shall be issued by the Principal Agent in accordance with clause 17.1.20: "*On suspension or termination…and surplus materials and goods*". In terms of clause 25.6

such materials and goods become the property of the Employer when "*certified and paid for*" and in terms of clause 29.5 the Employer "*may use materials and goods for which payment shall be included in the final account*"; as such it is likely safe to assume that the monetary value related to the surplus materials and goods referred to in clause 29.24.3 will be deducted from the amount already certified and paid for in terms of clause 25.6 for adjustment of the purpose of the final account to be issued in terms of clause 29.25.4: "*prepare and issue the final account*".

A failure by the Principal Agent to notify the above will have the result that such materials and goods will remain the property of the Employer.

12.4.2.39 Prepare items listed on termination (Clause 29.25)

The Principal Agent is obliged to prepare and effect four (4) obligations on termination of the agreement, these are summarised as follows in terms of clause 29.25 and confirmed by Segal (2018):

29.25.1: Issue compliance certificates as well as as-built drawings and product warranties;

29.25.2: A status report reflecting completed and incomplete work, within twenty (20) working days from the date for termination;

29.25.3 To continue certifying until the final payment certificate;

29.25.4 To prepare and issue the final account within sixty (60) working days from the date for termination.

Failure by the Principal Agent to prepare, and issue the items listed after termination with an adjustment to the contract value, will result in him/her failing to act in terms of the contract, which could result in a notice of disagreement in terms of clause 30.1.

12.5 Appendix 5 - Summary of the main features of the NEC ECC

As for the JBCC PBA, the CIDB (2005) provides an excellent summary shown in Table 32 of the main features of the NEC ECC (in verbatim and adapted for the NEC4 where appropriate):

Table 32 - CIDB summary of main features of the NEC ECC (Construction Industry Development Board (CIDB), 2005)

Aspect	Commentary
Application	Multi discipline and suitable for any sector or combination of sectors of the Engineering and construction industry. Suitable for projects or general procurement, either designed and managed by independent consulting Engineers, or designed by Engineers and managed by separate Project Managers both of whom may or may not be independent of the Employer.
Provision for different contracting strategies	Six main contracts to cover the full range of strategies A Activity schedule (lump sum) B Bill of quantities (re-measurement) C Target contract with activity schedule D Target contract with bill of quantities E Cost reimbursable contract F Management Contract.
"Tender" vs "contract"	"Tender" and "Contract" separated
Structure	One main document (black book) with common core clauses for all contracts. One set of main option clauses is then selected to create a particular contract. Further secondary option clauses may then be selected for use in any combination in any of the contracts.
Design by either party	Design by either party in any proportion to the extent stated in the Scope. Contractor 'Provides the Works' in accordance with the Scope; hence the obligation as to fitness for purpose or otherwise is based on what the Scope requires.
Limitation of liability	Limited to the amount stated in the Contract Data, per clause X18.2.

Aspect	Commentary
Loss of revenue, loss of profit, indirect and consequential: Other direct losses during the contract period: Loss and damage to Employer's surrounding property: Latent defects:	Unlimited for defects to the extent which Contractor is responsible, uncertain for others Limited to the amount stated in the Contract Data, per clause X18.3 Limited for the effects of the Contractor's design to an amount stated in Contract Data, per clause X18.4.
Financial risk allocation	Combination of main and secondary options can provide an almost unlimited range of contract strategy risk allocation in any of the traditional industry sectors. In addition through the use of 'compensation events' the Employer will only pay for the effect of certain risks if they occur and Contractor does not have to include for these in its prices. Basis of compensation is the same irrespective of the risk event, with the (separate) time and money effect considered in the same quotation at the same time. Contractor provides a cost and time forecast of the effect of the event based on its latest Accepted Programme, and on defined items of cost plus tendered overheads and profit. Project Manager accepts, asks for alternative quotations, or does its own assessment.
Role of the Employer and its agents	Project Manager and the Supervisor are agents of the Employer without restriction being stated in this contract. Such restriction may be stated in their own services contract with the Employer. If the Contractor does not accept their determination, he/she may submit the matter for resolution by an independent adjudicator appointed and paid equally by both parties
Subcontracting	Contractor liable as if he/she had not subcontracted. No provision for nominated subcontracts.

Aspect	Commentary
	Back-to-back NEC4 Engineering & Construction Subcontract (ECS) or the NEC4 Engineering and Construction Short Contract are provided. The Engineering and Construction Short Subcontract (ECSS) can also be used as a back-to-back subcontract.
Claims procedures	Extension of time and / or additional payment can only be made in terms of listed compensation events. Both the Project Manager and the Contractor have obligation to notify each other of any such event. Early warning is required first and quotations are required within a strict timetable.
Dispute management	All disputes referred to and settled by the Senior Representatives in the first instance, if not resolved referred to Adjudicator. Settlement is final and binding until revised by "the tribunal". The Parties under a separate contract appoint the adjudicator at the same time as they enter into a contract with each other. The Parties pay the adjudicator's fees equally. If dissatisfied, a party may notify the other that it is proceeding to the 'tribunal', which is the process pre-selected in Contract Data as being either arbitration or litigation

Steyn, et al. (2008) provide for an informative graphic on the relationship between contract types, risk and flexibility, as based on the Main Options contained in the NEC ECC:

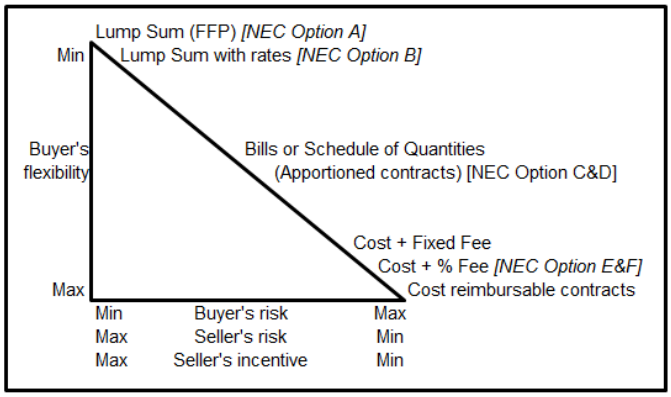


Figure 34 - The relationship between contract types, risk and flexibility (NEC Main Options) (Steyn, et al., 2008)

As is evident from Figure 34 the NEC is flexible in its approach to contracting and procurement strategies, with the Main Option B providing the Employer with flexibility,

moderate risk and incentive; while conversely exposing the Contractor with low risk and incentive.

12.6 Appendix 6 - NEC key features and layout

The NEC issues more than just the ECC contract; they have a wide range of different contracts to suit just about any procurement strategy, with the current suite of NEC4 contracts as issued in 2017 being listed as follows:

i. NEC4: Alliance Contract;
ii. NEC4: Engineering and Construction Contract;
    a. NEC4: Engineering and Construction Contract Option A: priced contract with activity schedule;
    b. NEC4: Engineering and Construction Contract Option B: priced contract with bill of quantities;
    c. NEC4: Engineering and Construction Contract Option C: target contract with activity schedule;
    d. NEC4: Engineering and Construction Contract Option D: target contract with bill of quantities;
    e. NEC4: Engineering and Construction Contract Option E: cost reimbursable contract;
    f. NEC4: Engineering and Construction Contract Option F: management contract;
iii. NEC4: Engineering and Construction Subcontract;
iv. NEC4: Engineering and Construction Short Contract;
v. NEC4: Engineering and Construction Short Subcontract;
vi. NEC4: Professional Service Contract;
vii. NEC4: Professional Service Subcontract;
viii. NEC4: Professional Service Short Contract;
ix. NEC4: Term Service Contract;
x. NEC4: Term Service Subcontract;
xi. NEC4: Term Service Short Contract;
xii. NEC4: Design Build and Operate Contract;
xiii. NEC4: Supply Contract;
xiv. NEC4: Supply Short Contract;
xv. NEC4: Dispute Resolution Service Contract;
xvi. NEC4: Framework Contract (www.neccontract.com, 2019).

In addition to the wide range of contracts, there are also Guidance Notes and Flowcharts to support the above documents.

In order to create set of NEC4 ECC conditions for the contract in question, the Employer (typically through its agents):

i. selects from the six main options as to which type of pricing mechanism is to apply;
ii. includes in the contract the nine sections of core clauses;
iii. specifies which dispute resolution option applies;
iv. includes such selection (if any) from the twenty detailed secondary option clauses as he/she thinks fit;
v. includes in the contract under secondary option Z any additional clauses required by him/her or as agreed with the Contractor;
vi. Completes its section of the Contract Data;
vii. Provides the project Scope;
viii. Provides the Project Site Information (as adapted from NEC3 by Eggleston (2006) to NEC4);

The NEC4 ECC is made up of 8 sections containing the related clauses or elements, listed as follows (Forward, 2018), (Institution of Civil Engineers, 2017):

i. NEC4 Core Clauses;
ii. NEC4 Main Option;
iii. NEC4 Secondary Option(s);
iv. NEC4 Option W1-W3;
v. NEC4 Contract Data I & II;
vi. NEC4 SCC (schedule of cost components) or SSCC (Short schedule of cost components);
vii. Project Scope;
viii. Project Site Information.

The 9 sections identified above are set out as follows:

i. NEC4 Core Clauses;

   There are 9 core clauses, each of which deals with an individual concept (Forward, 2018):

   a. Section 1 – General;
   b. Section 2 – The Contractor's main responsibilities;
   c. Section 3 – Time;
   d. Section 4 – Quality management;

e. Section 5 – Payment;
f. Section 6 – Compensation events;
g. Section 7 – Title;
h. Section 8 – Liabilities and insurance;
i. Section 9 – Termination;

ii. NEC4 Main Option (only the **highlighted** secondary options are considered for the research report, as so identified in 1.7 Limitations);

a. Main Option A - Priced contract with activity schedule;
b. Main Option B - Priced contract with bill of quantities;
c. Main Option C - Target contract with activity;
d. Main Option D - Target contract with bill of quantities;
e. Main Option E - Cost reimbursable contract;
f. Main Option F - Management contract;

iii. NEC4 Secondary Option(s) (only the **highlighted** secondary options are considered for the research report, as so identified in 1.7 Limitations);

a. Option X1: Price adjustment for inflation
b. Option X2: Changes in the law
c. Option X3: Multiple currencies
d. Option X4: Ultimate holding company guarantee
e. Option X5: Sectional Completion
f. Option X6: Bonus for early Completion
g. Option X7: Delay damages
h. Option X8: Undertakings to the Client or Others
i. Option X9: Transfer of rights
j. Option X10: Information modelling
k. Option X11: Termination by the Client
l. Option X12: Multiparty collaboration (not used with Option X20)
m. Option X13: Performance bond
n. Option X14: Advanced payment to the Contractor
o. Option X15: The Contractor's design
p. Option X16: Retention
q. Option X17: Low performance damages
r. Option X18: Limitation of liability
s. Option X20: Key Performance Indicators (not used with Option X12)
t. Option X21: Whole life cos t

u. Option Y(UK)1: Project Bank Account
v. Option Y(UK)2: The Housing Grants, Construction and Regeneration Act 1996
w. Option Y(UK)3: The Contracts (Rights of Third Parties) Act 1999
x. Option Z: Additional conditions of contract

iv. NEC4 Option W1-W3 (One of the following procedures for resolving and avoiding disputes must be selected to complete the chosen main Option) (Forward, 2018) (Institution of Civil Engineers, 2017) (only the **highlighted** secondary options are considered for the research report, as so identified in 1.7 Limitations);
   a. Option W1: Used when Adjudication is the method of dispute resolution and the United Kingdom Housing Grants, Construction and Regeneration Act 1996 does not apply;
   b. Option W2: Used when Adjudication is the method of dispute resolution and the United Kingdom Housing Grants, Construction and Regeneration Act 1996 applies;
   c. Option W3: Used when a Dispute Avoidance Board is the method of dispute resolution and the United Kingdom Housing Grants, Construction and Regeneration Act 1996 does not apply.

v. NEC4 Contract Data I & II:
   a. Contract Data I – Data provided by the Client;
   b. Contract Data II – Data provided by the Contractor.

vi. NEC4 SCC or SSCC;
   a. Schedule of cost components (the full version of which is not applicable to Main Option B (Forward, 2018), as considered for the research report, as so identified in 1.7 Limitations)
   b. Short schedule of cost components (as applicable to Main Option B (Forward, 2018), as considered for the research report, as so identified in 1.7 Limitations)

vii. Project Scope;

viii. Project Site Information.

Contrary to the JBCC PBA, the NEC ECC empowers Employers with many different contracting strategies, many of which in one single contract (for construction work) by way of the different main options A to F.

12.7 Appendix 7 – NEC4 ECC critical analysis

The below referenced is the critical analysis of the NEC4 ECC for all mandatory obligations outside of the 'main obligations' as referenced by Segal (2018) and covered under 5.2.

12.7.1 Risks due to the obligations of the Employer

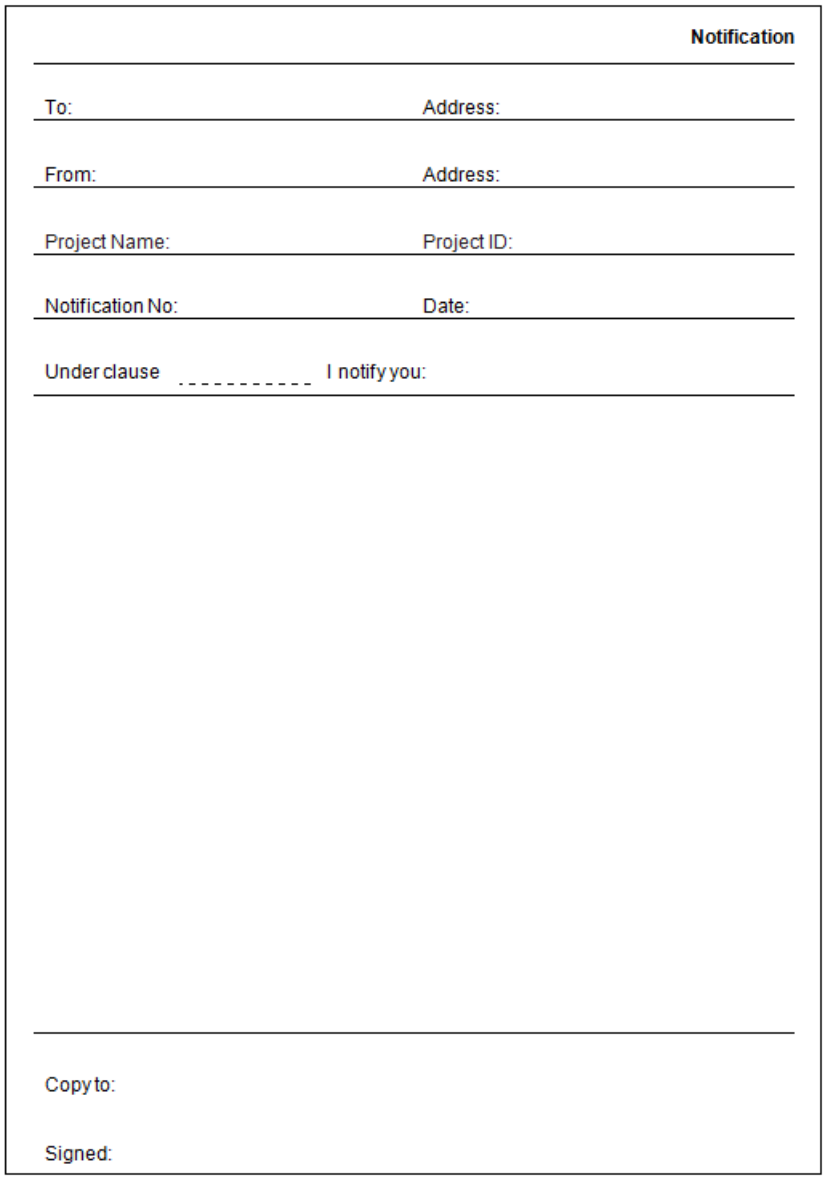
12.7.1.1 Communicate in a form which can be read, copied and recorded in the language of the contract (Core Clause 13.1)

Under the NEC3 ECC there was a plethora of different documents which the contract required to be communicated which can be read, copied and recorded; however under the NEC4 this has changed the clause to refer to "*Each communication*", as according to Thomas (2012) previously there was no requirement that instructions and certificates take a particular form. Egglestone (2006), Hughes (2016), Rowlinson (2011) and Thomas (2012) all agree that any communication in terms of the contract has to be in writing. In keeping with modern technology Thomas (2012) and Hughes (2016) agrees that e-mail is effective for the purpose of the contract with Hughes (2016) going on to add that the project intranet (if applicable) is also a suitable method. Evans (2017) and Hughes (2016) adds that oral communication is not recognised under the NEC, which is a departure from some other forms of contract, which require the oral communication to be reduced to writing within a certain period of time.

When referring to the NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) there are examples of forms to use for different types of communication, which goes beyond simple e-mails. The common thread in each of the different examples shown is the following:

i. To whom addressed, with accompanying address;
ii. From whom, with accompanying address;
iii. Project Name;
iv. Project ID;
v. Instruction / Notification / Submission / Acceptance / Payment Certificate / Completion Certificate / Take Over Certificate / Defects Certificate No.;
vi. Date;
vii. Statement under which clause the communication is written;
viii. Copy to;
ix. Signature.

An example of an instruction contained in the user guide is shown in Figure 35:


Notification

To: Address:

From: Address:

Project Name: Project ID:

Notification No: Date:

Under clause ---------- I notify you:

Copy to:

Signed:

Figure 35 - Example communication form under NEC4 ECC (Institution of Civil Engineers, 2017)

12.7.1.2 Communicate notifications required in terms of the contract separately from other communications (Core Clause 13.7)

In practice and in terms of the contract, the Employer will not have much direct involvement in the project in terms of communication, as its Project Manager and Supervisor are its appointed agents to perform its duties on its behalf (Evans, 2017), however there are certain instances where the Employer is required to give notifications, with these having to be reduced to writing, as in terms of clause 13.7 (covered in 12.7.1.1 Communicate in a form which can be read, copied and recorded in the language of the contract (Core Clause 13.1)) oral instructions are not an accepted form of communication.

Notification by the Employer is required for the following:

i. in terms of clause 14.4 notifies the Contractor for the replacement of the Project Manager or the Supervisor (Eggleston, 2006);
ii. in terms of clause 90.1 where the Employer is required to notify the Project Manager of its wish *"…to terminate the Contractor's obligation to Provide the Works…*"; and
iii. in terms of clause W1.1(2) notifies the "*…Senior Representatives, the other Party and the Project Manager of the nature of the dispute it wishes to resolve…*".

12.7.1.3 Takes over the works not later than two weeks after Completion (Core Clause 35.1)

Before covering any aspect of the above referenced clause, it is important to understand that there are substantial differences between Completion and Take Over. The NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) describes Completion as "*about what the state the works are in*" and Take Over as "*about who is using or occupying the works*", with the provision that Take Over may take place before Completion.

In the first part of the clause it is so indicated that the Client need not take over the works if not so identified in the Contract Data; however, the second part creates for an obligation on the Employer's side in that it will take over the Works within two weeks of Completion. According to Egglestone (2006) this imposed time limit ensures that the Contractor is not left with prolonged care of the works responsibilities, with the clause supporting the Contractor's right to finish early and for the Employer to have time to arrange for the required insurance cover, as Thomas (2012) explains that this is the point in time when the liability for risk of loss of or damage to the works passes over from the Contractor to the Employer and is in accordance with clause 80.1.

Evans (2017) contends that the Employer can take over the whole of the works prior to Completion, , however this gives rise to a compensation event for the Contractor if it occurs also before the Completion Date (60.1(15)).

In terms of clause 44.4 the Employer allows "*…Contractor access to and use of part of the works which has been taken over…*", however this is only if the same is required for the correction of a defect.

The flow chart in Figure 36 shows the process for the Employer to Take Over the works:

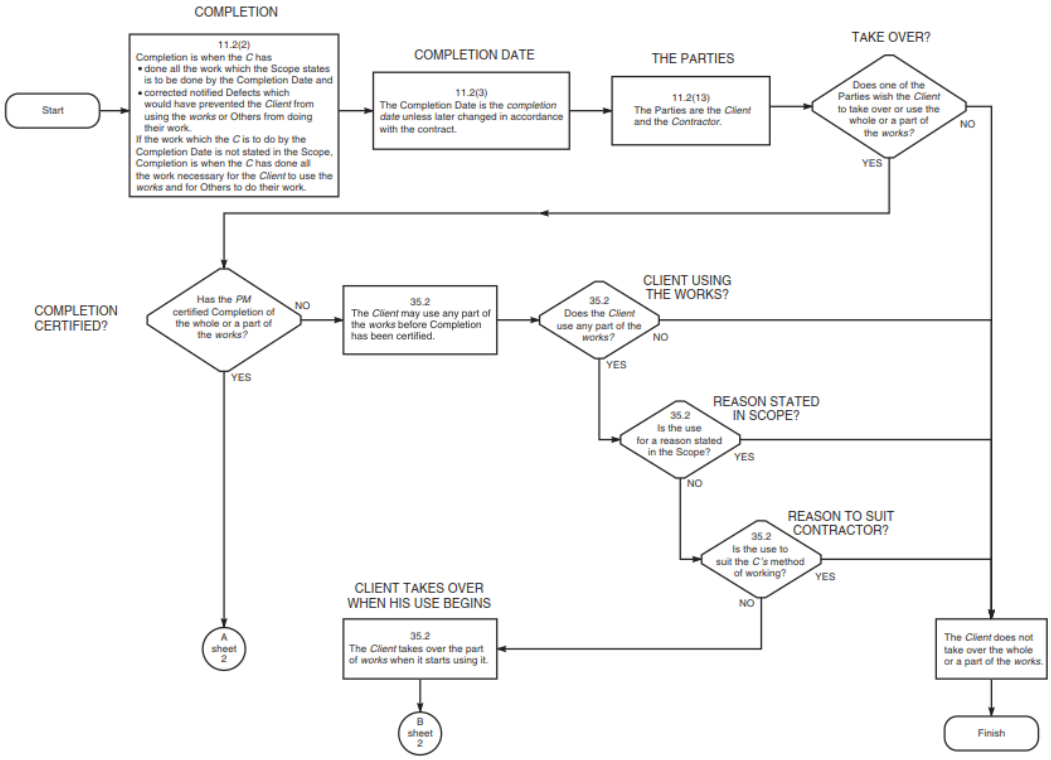


Figure 36 - Flow chart indicating the Take Over process (NEC4) (Institution of Civil Engineers, 2017)

12.7.1.4 Provide materials, facilities and samples for tests and inspections as stated in the Scope (Core Clause 41.2)

The above clause again highlights the importance of preparing a thorough Scope, as reference is made to the Parties providing in terms of nothing other than the Scope. The NEC include in their user guide: Preparing and Engineering and Construction Contract Volume 2 (Institution of Civil Engineers, 2017) a section on how to prepare the Scope. The same contains a section on quality, describing in detail what is required from the Scope on this subject. Additionally, the above document reiterates the ECC's requirement for the Scope to "*State the materials, facilities and samples to be provided by the Contractor and the Client for tests and inspections and the timing of these*". Egglestone (2006) agrees on this point and highlights that these obligations take effect only to the extent they are detailed in the Scope.

Failure by the Employer to "…*provide materials, facilities and samples for tests and inspections as stated in the Scope.*" will result in a Compensation Event in terms of clause 60.1(16), which could ultimately result in additional time and cost for the Employer as a result of its own failure in to provide in terms of its mandatory obligation.

Thomas (2012) contends that there may be some ambiguity where the Scope requires a test or inspection to be carried out (in terms of clause 41.1), but does not state which of

the Parties provide the materials, facilities and samples for the tests and inspections (in terms of clause 41.2), to this end either the Project Manager or the Contractor notifies in terms of clause 17.1 the other as soon as either becomes aware of such an ambiguity, which will also result in a Compensation Event in terms of clause 60.1(1).

12.7.1.5 Carries the liabilities listed (Core Clause 80.1)

The Employer is liable for all of any (and all) of the events/items as stated in clause 80.1 as well as those additional Employer's liabilities as may be stated in the Contract Data Part One until the Defects Certificate (Evans, 2017), failure to accept the same liabilities may result in a Compensation Event in terms of clause 60.1(14), as such any cost related to these events dealt with accordingly, and not in terms of clause 82.1 (recovery of costs).

According to Eggleston (2006) the events can be summarised in broad categories, as follows:

i. general – use of the works, unavoidable loss or damage;
ii. loss or damage of Employer supplied goods;
iii. war, riots and similar non-insurable events;
iv. loss or damage after take-over;
v. loss or damage after termination; and
vi. additional risks as listed in the Contract Data.

According to the NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) certain events may arise which are classified as Prevention events in terms of clause 19; the results of which is managed by the Project Manager.

12.7.1.6 Any cost which the Contractor has paid or will pay to Others as a result of an event which the Client is liable is paid by the Client (Core Clause 82.2)

The Client carries the listed liabilities in terms of clause 80.1. What is important to note here is that if any of the events listed in clause 80.1 occurs it is a compensation event in terms of clause 60.1(14): "*An event which is a Client's liability stated in these conditions of contract.*" Consequently, the Employer is liable for the cost that the Contractor has incurred as a result of such an event occurring, with those costs being extended to the Contractor's supply chain where there were expenses as a result of such events for which the Employer is liable.

Failure by the Employer may result in a dispute being referred to the Senior Representatives in terms of clause W1, specifically about "*Any other matter*" in terms of the dispute reference table.

12.7.1.7 Provides the insurance as stated in the Contract Data (Core Clause 83.1)

The Parties may agree to changes in the Insurance Table contained in clause 83.3, with the insurances required to be provided by the Employer being stated in the Contract Data – these are the only insurances which the Employer provides, with the details of the proof of the insurance and the acceptance of the same by the Contractor being dealt with in clause 86 (Insurance by the Client). Failure by the Employer to provide the insurance required may result in the Contractor insuring the same event or liability in terms of clause 86.3, with the cost of this insurance being incurred by the Contractor, but ultimately paid by the Employer.

Figure 37, as contained in the NEC4 flow charts: Engineering and Construction Contract flow chart (Institution of Civil Engineers, 2017) shows the insurance cover required and process:

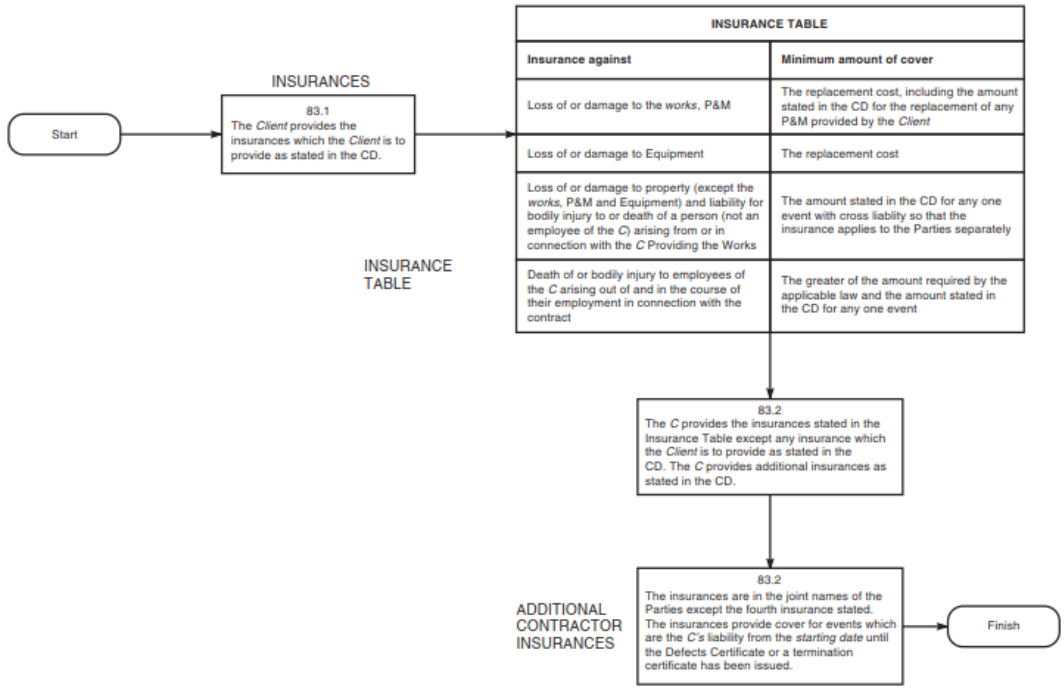


Figure 37 - Insurance cover required and process (NEC4) (Institution of Civil Engineers, 2017)

12.7.1.8 Ensure that insurance policies include a waiver by the insurers of their subrogation rights against the parties and the directors and other employees of every insured except where there is fraud (Core Clause 84.2)

According to Rowlinson (2011): "*Subrogation rights are a legal right open to insurers to put themselves in the insured party's position and to then use that position to recover the damages they have paid to the insured from the person or persons who caused the damage. This waiver does not apply when an employee or director of an insured party has been involved in fraud.",* going on to indicate that the above does not apply to the Project Manager or the Supervisor, but is limited to the Parties.

Failure by the Employer to provide the insurance required (as well as in terms of clause 84.3 the terms and conditions of the same) may result in the Contractor insuring the same event or liability in terms of clause 86.3, with the cost of this insurance being incurred by the Contractor, but ultimately paid by the Employer.

Figure 38, as contained in the NEC4 flow charts: Engineering and Construction Contract flow chart (Institution of Civil Engineers, 2017) shows the insurance cover and consequences for inaction:

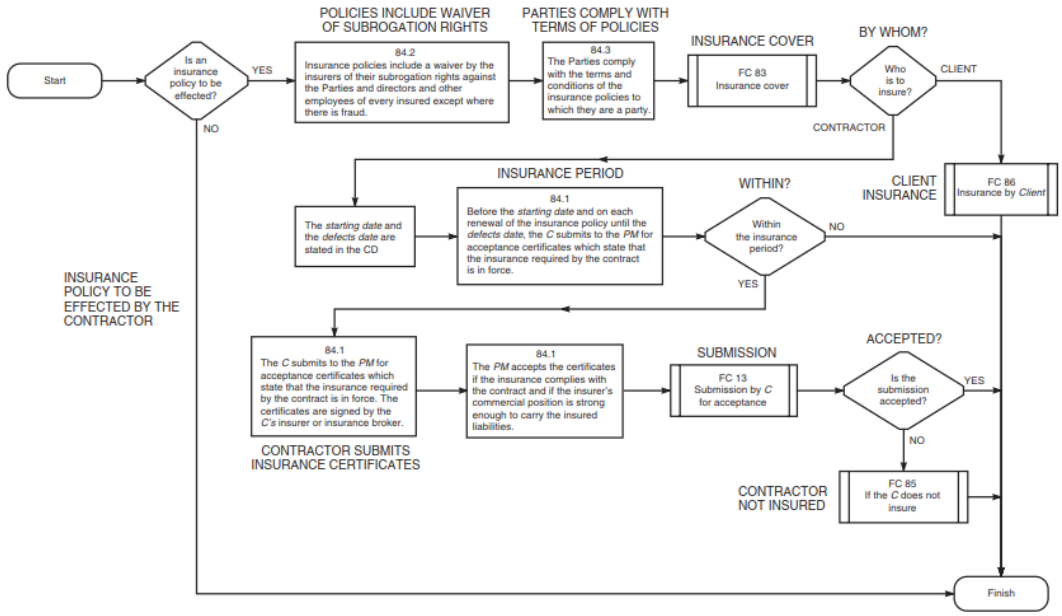


Figure 38 - Insurance cover and consequences for inaction (NEC4) (Institution of Civil Engineers, 2017)

12.7.1.9 Comply with the terms and conditions of the insurance policies (Core Clause 84.3)

Rowlinson (2011) and Thomas (2012) indicates that the above compliance is required for the safeguard of its validity, with a breach of the above term and the insurance policy resulting in the insurance policy becoming void; with the end result being that any cost related to the insured event ultimately being borne by the party in breach of the term. The Parties are implied to be fully aware of what exactly the insurance provided by the other covers and what the wording of the same is, to this end NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) agrees that the Employer may require its Project Manager to ensure the same.

12.7.1.10 Pay the Contractor the cost of any insurance taken out by the Contractor where the Contract requires the Employer to take out such insurance but for which the Employer does not submit a required policy or certificate (Core Clause 86.3)

According to Evans (2017) and Rowlinson (2011) the Employer is obliged in accordance with clause 86.3 to pay for any insurance taken out by the Contractor which according to Thomas (2012) the Contract by way of specification in the Contract Data requires the Employer to take out such insurance but for which the Employer does not submit a required policy or certificate.

12.7.1.11 Appoint the Adjudicator under the NEC Dispute Resolution Service Contract (joint) (Core Clause W1.2 (1))

In terms of the Contract and according to Evans (2017) the Adjudicator named in the Contract Data Part One is appointed at the starting date under the NEC Dispute Resolution Service Contract. What is of interest here is that Judge Jeffrey ruled in *Transnet SOC Limited v Group Five Construction (Pty) Ltd and Others (7848/2015) [2016] ZAKZDHC 3 (9 February 2016)* that the reference to Adjudicator does not per se refer to a single Adjudicator, as clause 12.1 states that "*...words in the singular also mean in the plural and the other way around.*" and that different Adjudicators may be appointed on an ad hoc basis for different disputes.

Without the appointment of the Adjudicator the Contract cannot function properly, with no specific remedy in place in the terms of the Contract for non-compliance with this joint obligation between the Employer and the Contractor. According to Egglestone (2006) the remedy for the same may have to be found in the courts.

12.7.1.12 If the Adjudicator resigns or is unable to act, jointly choose a new Adjudicator (joint) (Core Clause W1.2 (3))

In terms of the Contract and according to Evans (2017) the Parties jointly choose a new Adjudicator if the present Adjudicator resigns or is unable to act. Without the appointment of the replacement Adjudicator the Contract cannot function properly, with no specific remedy being in place for non-compliance with this joint obligation between the Employer and the Contractor. According to Egglestone (2006) the remedy for the same may have to be found in the courts.

12.7.1.13 Include with its referral information to be considered by the Adjudicator (Core Clause W1.3 (3))

The obligation for the Employer is as is stated in the clause with the consequence of its non-compliance being that its submission to the Adjudicator is not fully substantiated and that he/she may place him/herself at a disadvantage owing to this. According to Rowlinson (2011) the information is copied to the Contractor at the same time in terms of clause W1.3(6).

12.7.1.14 Provide any further information to the Adjudicator as instructed within the period stated (Core Clause W1.3 (5))

In terms of the Contract and according to Egglestone (2006) and Evans (2017) clause W1.3(5) sets out the Adjudicator's powers, one of which is that the Adjudicator may request either Party to provide further information. The consequence of non-compliance in this regard being that its submission to the Adjudicator is not fully substantiated and that he/she may place him/herself at a disadvantage owing to this.

12.7.1.15 Comply with any instruction of the Adjudicator (Core Clause W1.3 (5))

In terms of the Contract and according to Egglestone (2006) and Evans (2017) clause W1.3(5) sets out the Adjudicator's powers, one of which is that the Adjudicator instructs a Party (in this case the Employer) "*to take any other action which is considered necessary for the Adjudicator to reach a decision…*". The consequence of non-compliance in this regard being that its submission to the Adjudicator is not fully substantiated and that he/she may place him/herself at a disadvantage owing to this.

12.7.1.16 Copy any communication to the Adjudicator to the Contractor at the same time (Core Clause W1.3 (6))

In terms of the Contract and according to Egglestone (2006) and Evans (2017) clause W1.3(6) simply states that the standard procedural rule be applied. However according to Egglestone (2006) it is just as important for the Adjudicator to copy the other party in a communication to a party, although the clause does not require the same.

12.7.1.17 Proceed as if the matter disputed was not disputed (Core Clause W1.3 (9))

In terms of the Contract and according to Egglestone (2006), Evans (2017), Rowlinson (2011) and Thomas (2012) the Parties, the Project Manager and the Supervisor continue as if the dispute has not happened; as such the operation of the contract effectively is required to continue, despite certain actions having been taken which the Adjudicator's decision may revise. According to Evans (2017) an example of such a decision would for defective work to be corrected by the Contractor, but which the Contractor disputes, would still have to be corrected although the matter is disputed.

The above clause W1.3(9) has a close link to clause W1.3(10) which states that the "*Adjudicator's decision is binding and is enforceable*", as was ruled by judge Vos in *Ekurhuleni West College v Segal and Another (26624/2017) [2018] ZAGPPHC 662 (29 August 2018)* where the applicant approached the court on the decision of the Adjudicator based on its dissatisfaction with the same, without following its contractual recourse in terms of clause W1.3(10) in referring its dissatisfaction to the Tribunal.

12.7.1.18 Do not refer any dispute to the tribunal unless it has first been referred to the Adjudicator (Core Clause W1.4 (1))

In terms of the Contract and according to Egglestone (2006), Evans (2017), Rowlinson (2011) and Thomas (2012) it is a condition precedent for any dispute to be referred to the Senior Representatives of the Parties, and if not resolved the Adjudicator before it can be referred to the tribunal. In terms of clause W1.3(2) the contractual timescales for the required notifications and referrals are to be adhered to by the Parties, with the result of non-conformance being that the dispute may no longer by referred to either Adjudication or the tribunal; that is the party intending to refer the matter, but which misses a certain timeline loses its right to further dispute resolution.

Figure 39, as contained in the NEC4 flow charts: Engineering and Construction Contract flow chart (Institution of Civil Engineers, 2017) shows the above referenced time-bar

(contained in clause W1.3(2) and the resulting loss of the right to referral to the Adjudicator or tribunal:

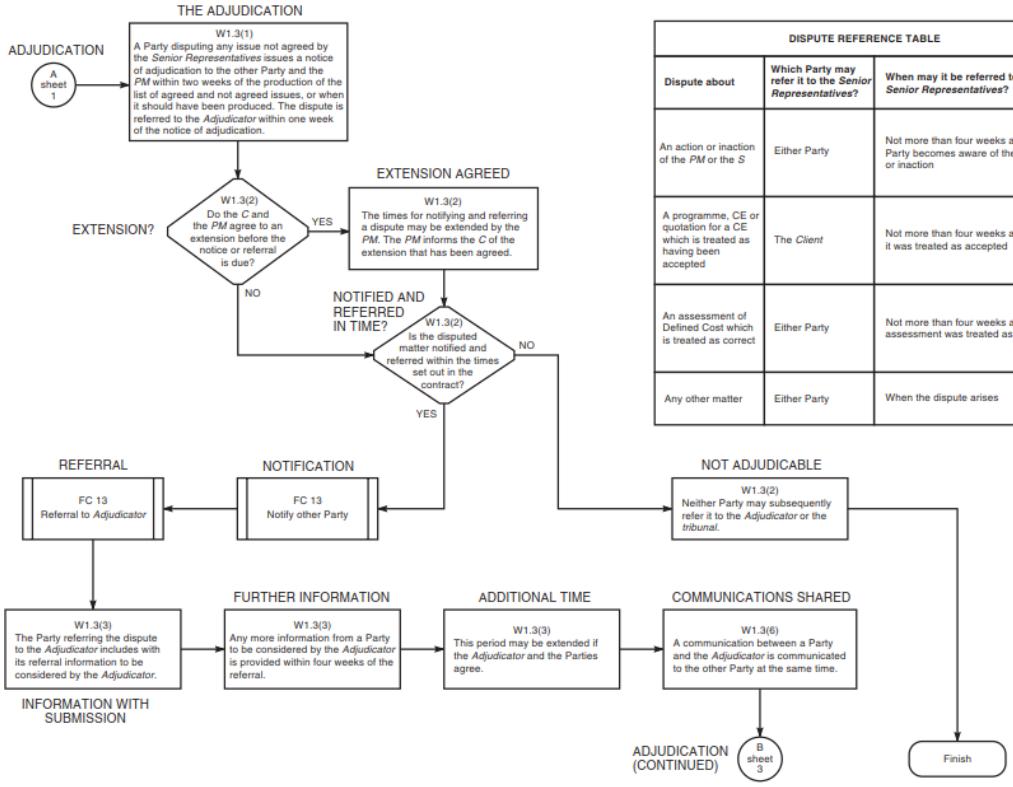


Figure 39 – Resolving disputes – Adjudication (Institution of Civil Engineers, 2017)

Figure 40, as contained in the NEC4 flow charts: Engineering and Construction Contract flow chart (Institution of Civil Engineers, 2017) shows the process flow for the resolution of disputes by the tribunal if any of the Parties is in disagreement with the finding of the Adjudicator:

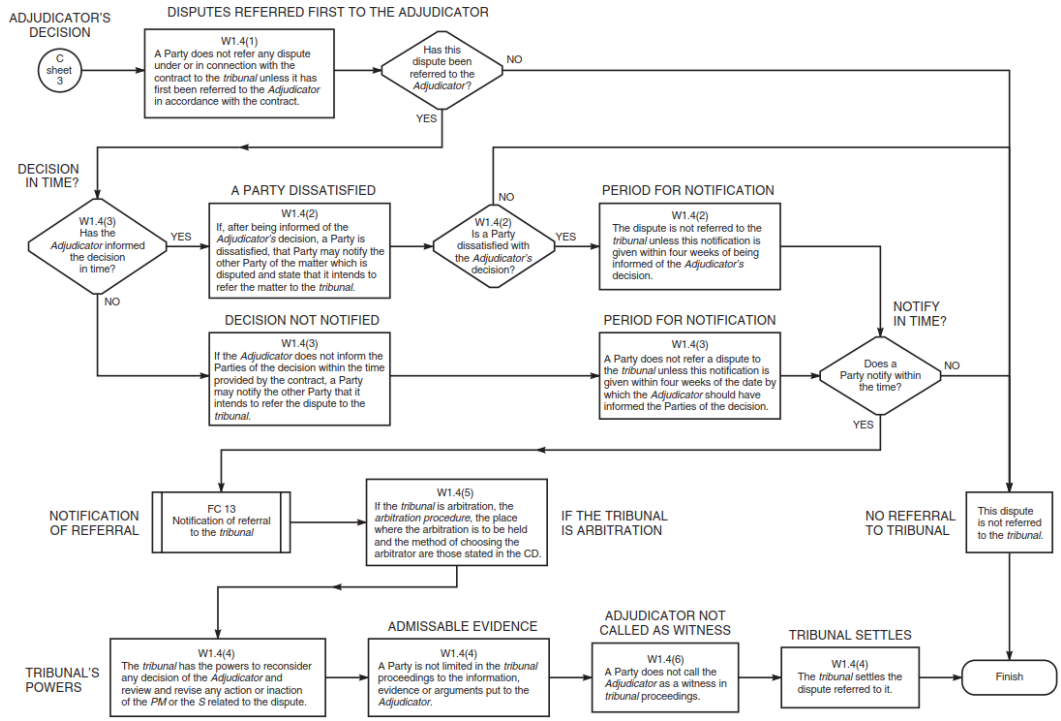


Figure 40 - Resolving disputes – referral to the tribunal (NEC4) (Institution of Civil Engineers, 2017)

12.7.1.19 Do not call the Adjudicator as a witness in tribunal proceedings (Core Clause W1.4 (6))

In terms of the Contract and according to Egglestone (2006), Evans (2017), Rowlinson (2011) and Thomas (2012) the Adjudicator cannot be called as a witness in the tribunal proceedings; which according to Thomas (2012) ensures a clean break between the adjudication and tribunal proceedings. Although not applicable to the aforementioned clause, according to Egglestone (2006) both Adjudicators and Arbitrators have been served with attendance orders to court proceedings in various jurisdictions, with this clause being of little protection in such a case.

12.7.2 Risks due to the obligations of the Project Manager

12.7.2.1 Reply to a communication submitted or resubmitted to him/her by the Contractor for acceptance (Core Clause 13.4)

In terms of the Contract and according to Egglestone (2006), Evans (2017), Rowlinson (2011) and Thomas (2012) the Project Manager is required to respond within the period for reply to a communication to him/her for acceptance, by either accepting or not accepting the submission.

According to Egglestone (2006) the following is a list of matters which falls within clause 13.4's scope (clause numbers adapted for the NEC4 ECC):

i. Clause 16.3 – proposals to add to the working areas;
ii. Clause 21.2 – particulars of the Contractor's design;
iii. Clause 23.1 – particulars of design of equipment;
iv. Clause 24.1 – replacement persons;
v. Clause 26.2 – names of subcontractors;
vi. Clause 26.3 – conditions of contract for subcontracts;
vii. Clause 31.1 – the first programme;
viii. Clause 31.3 – regular programmes;
ix. Clause 32.2 – revised programmes;
x. Clause 62.3 – quotations for compensation events;
xi. Clause 86.1 – insurance policies;
xii. Clause X13.1 – performance bond;
xiii. Clause X14.2 – advanced payment bond.

12.7.2.2 If a reply is not acceptance, then state its reasons (Core Clause 13.4)

In terms of the Contract and according to Egglestone (2006), Evans (2017), Rowlinson (2011) and Thomas (2012) the Project Manager is required to respond within the period for reply to a communication to him/her for acceptance, by either accepting or not accepting the submission. The contract states that if the reply is not acceptance, the Project Manager is required to provide feedback in sufficient detail to provide the Contractor with the necessary information to correct the matter. A reason for non-acceptance is that more information is required for its consideration of the Contractor's submission.

According to Evans (2017) the contract is silent on instances where the Project Manager does not accept, but does not state reasons – to this end he contends that this may give rise to a Compensation Event in terms of clause 60.1(18) due to the breach by the Project Manager on behalf of the Employer.

12.7.2.3 Communicate notifications separately from other communications (Core Clause 13.7)

Refer to 12.7.1.2 - Communicate notifications required in terms of the contract separately from other communications (Core Clause 13.7) for a detailed analysis of this obligation,

this is owing to the fact that in accordance with the contract the principal applies to the Project Manager as much as it does for the Employer.

In addition to the above, the following is a summary of the notifications required by the Project Manager:

i. In terms of clause 17.1 the Project Manager notifies the Contractor *"...as soon as either becomes aware of an ambiguity or inconsistency in or between the documents which are part of the contract"*;
ii. In terms of clause 17.2 the Project Manager notifies the Contractor *"...as soon as either becomes aware that the Scope includes an illegal or impossible requirement*";
iii. In terms of clause 31.3 the Project Manager notifies the Contractor "…*of the acceptance of the programme or the reasons for not accepting it*";
iv. In terms of clause 60.1(17) the Project Manager notifies the Contractor "…*of a correction to an assumption which the Project Manager stated about a compensation event*";
v. In terms of clause 60.1(20) the Project Manager notifies the Contractor "…*that a quotation for a proposed instruction is not accepted.*";
vi. In terms of clause 61.1 the Project Manager notifies the Contractor "*For a compensation event which arises from the Project Manager or the Supervisor giving an instruction or notification, issuing a certificate or changing an earlier decision, the Project Manager notifies the Contractor of the compensation event at the time of that communication*";
vii. In terms of clause 61.4 the Project Manager notifies the Contractor *"...that the Prices, the Completion Date and the Key Dates are not to be changed and states the reasons in the notification*";
viii. In terms of clause 61.6 the Project Manager notifies the Contractor of a correction of an earlier assessment based on assumptions if "*the effects of a compensation event are too uncertain to be forecast reasonably*";
ix. In terms of clause 64.3 the Project Manager notifies the Contractor "…*of the assessment of a compensation event and gives details of the assessment within the period allowed for the Contractor's submission of its quotation for the same compensation event*";
x. In terms of clause 66.1 the Project Manager notifies the Contractor of the implementation of a compensation event at the time the Project Manager accepts the Contractor's quotation or of the Project Manager's assessment made.

12.7.2.4 Give an early warning by notifying the Contractor as soon as he/she becomes aware of any matter which could: increase the total of the Prices, delay Completion, delay meeting a Key Date or impair the performance of the works in use (Core Clause 15.1)

In terms of the Contract and according to Egglestone (2006), Evans (2017), Rowlinson (2011) and Thomas (2012) the Project Manager is required to give an early warning as soon as he/she becomes aware of any matter for the items as listed in clause 15.1. The early warning system contained in the NEC is an excellent contractual mechanism to ensure that the Parties and the Project Manager are all notified and thus aware of matters which may increase the cost and time in the future – to this end the NEC sets itself apart in that this clause goes to the heart of collaboration and effective management of the contract to ensure that both Parties work together to find innovative solutions (always within the confines of the contract) to problems; thus clause 15.1 ties back to clause 10.2 in that the Parties and the Project Manager "*act in a spirit of mutual trust and co-operation*".

In order to obviate additional and unnecessary paperwork the contract does not require any Party or the Project Manager to include in the Early Warning Register any matter which has already been dealt with as a compensation event.

The consequence of non-compliance by the Project Manager with respect to the requirement for the notification to the Contractor is not expressly stated, however Evans (2017) contends that the result of the same may be additional time and cost or a degradation in the performance of the works – I contend that this is likely to occur under clause 60.1(18) – breach of contract by an agent of the Employer, as the Project Manager did not meet its obligation.

12.7.2.5 Prepares a first Early Warning Register and issues it to the Contractor (Core Clause 15.2)

In a departure from the NEC3, which was silent on the matter of who prepares the first Early Warning Register, the NEC4 requires the Project Manager in terms of the Contract to prepare the first Early Warning Register and issues the same to the Contractor within one week of the starting date.

In terms of clause 11.2(8) the Early Warning Register is *"... a register of matters which are*

• *listed in the Contract Data for inclusion and*

• *notified by the Project Manager or the Contractor as early warning matters.*

It includes a description of the matter and the way in which the effects of the matter are to be avoided or reduced."

According to Rowlinson (2011) the Early Warning Register contains the risks that may have an impact on the project, as opposed to business risks that may affect the feasibility of the project.

The consequence of non-compliance by the Project Manager with respect to the requirement for the preparation of the first Early Warning Register and issuance of the same to the Contractor is not expressly stated, however the result of the same may be additional time and cost – I contend that this is likely to occur under clause 60.1(18) – breach of contract by an agent of the Employer, as the Project Manager did not meet its obligation.

12.7.2.6 Co-operate at the early warning meeting as required in the contract (Core Clause 15.3)

The first thing to note about the early warning meeting is that according to Evans (2017) and Thomas (2012) the purpose of the meeting is not to blame others nor is it a finger-pointing exercise, rather, all those in attendance are required in terms of the contract to cooperate to make and consider proposals to avoid or reduce identified risks, seek solutions and decide on actions to be taken and who will implement these actions.

The consequence of non-compliance by the Project Manager with respect to cooperation at the early warning meeting occur under clause 60.1(18) – breach of contract by an agent of the Employer, as the Project Manager did not meet its obligation. Thomas (2012) contends that it is likely that the Project Manager will not readily acknowledge.

12.7.2.7 Revises the Early Warning Register to record the decisions made (Core Clause 15.4)

In accordance with the contract and Egglestone (2006), Evans (2017), Rowlinson (2011) and Thomas (2012) the Project Manager is required to revise the Early Warning Register to record the decisions made at the early warning meeting, the Early Warning Register is issued to the Contractor within one week of the early warning meeting. According to Rowlinson (2011) it is clear that the Project Manager remains the owner of the Early Warning Register, as he/she is the one that is required to make the changes and to issue the same to the Contractor.

The consequence of non-compliance by the Project Manager with respect to revision of the Early Warning Register occur under clause 60.1(18) – breach of contract by an agent of the Employer, as the Project Manager did not meet its obligation.

12.7.2.8 Gives an instruction if a decision at an early warning meeting needs a change to the Scope (Core Clause 15.4)

In accordance with the contract and Egglestone (2006), Evans (2017), Rowlinson (2011) and Thomas (2012) the Project Manager is required to instruct any decision that is included in the Early Warning Register that means a change to the Scope – these decisions that result in a change to the Scope are dealt with in terms of clause 60.1(1).

The consequence of non-compliance by the Project Manager with respect to revision of the Early Warning Register occur under clause 60.1(18) – breach of contract by an agent of the Employer, as the Project Manager did not meet its obligation.

12.7.2.9 Consult with Employer and Contractor about proposal from Contractor for reduced cost (Core Clause 16.1)

This clause is another incentive by the NEC to include for collaboration (think clause 10.2… "*act in a spirit of mutual trust and co-operation*"), in that it provides a contractual mechanism for the Contractor to propose cost reduction initiatives for the provision of the works to the Project Manager. These proposals will mean a change in the Scope of the project, as such the Project Manager is required in terms of the above clause to consult with the Employer about the Contractor's proposed change, this is owing to the fact that a change to the Scope in this respect is likely outside of the Project Manager's approval mandate.

It is unlikely that the Contractor would go down the route of a compensation event in terms of clause 60.1(18) – breach of contract by an agent of the Employer, as the Contractor likely does not stand to lose any time or money if such a proposal is not accepted.

12.7.2.10 Accepts (or not accepts) a proposal from the Contractor for reduced cost (Core Clause 16.2)

In terms of the contract the Project Manager is required within four weeks to either:

i. accept the proposal and issues an instruction to change the Scope;
ii. informs the Contractor that the Employer is considering the proposal and instructs the Contractor to submit a quotation for the change in Scope;

iii. informs the Contractor that its proposal for reduction is not accepted.

What is of interest is that the Project Manager may give any reason for not accepting the Contractor's proposal for reduced cost; however as has been stated in 12.7.2.10 - Accepts (or not accepts) a proposal from the Contractor for reduced cost (Core Clause 16.2) it stands to reason that the Project Manager ought to have consulted with the Employer in respect of its proposal.

12.7.2.11 Accepts (or not accepts) a proposal from the Contractor to add an area to the Working Areas (Core Clause 16.3)

In accordance with clause 11.2(20) the Working Areas is defined as follows:

"The Working Areas are the Site and those parts of the working areas (per the Contract Data) *which are*
• *necessary for Providing the Works and*
• *used only for work in the contract*
unless later changed in accordance with the contract"

This clause can create a little confusion with regards to the fact that "working areas" is both a defined term, that is 'Working Areas', as well as an area so described in the Contract Data, that is *'working areas'.* Thomas (2012) indicates that the above clause 16.3 relates to additional area in the 'Working Areas' that are outside the *'working areas'* as stated by the Contractor in the Contract Data Part Two. Egglestone (2006) argues that a possible reason for the Contractor making such a proposal to add to the Working Areas is for the payment of off-site materials without involving clause 71.1 which relates to marking of Equipment, Plant and Materials outside the Working Areas.

According to Andrew Baird this observation by Egglestone is somewhat academic as the process of marking or not marking is more to do with title to the Plant and Materials. In his view increasing the Working Areas just to avoid the chore of marking would fall within both reasons for not accepting the proposed increase, especially as the additional area is most likely used for work not in this contract. A far more serious risk for the Employer with a proposed increase to the Working Areas is that an opportunist Contractor could see the potential for getting people, and Equipment in the additional area paid for in the case of a compensation event per the Schedule of Cost Components. Whereas without the benefit of the additional area, those costs are included in the Fee

The clause states that the reasons for the Project Manager for not accepting the proposal is that the Contractor's proposed area is not necessary for Providing the Works or used

for work not in the Contract. Any reason other than these reasons would necessarily result in a compensation event in terms of clause 60.1(9): "*The Project Manager withholds an acceptance (other than acceptance of a quotation for acceleration or for not correcting a Defect) for a reason not stated in the contract.*"

12.7.2.12 Notifies the Contractor as soon has he/she becomes aware of an ambiguity or inconsistency in or between the documents which are part of the contract (Core Clause 17.1)

The contract requires the Project Manager to notify the Contractor as soon as he/she becomes aware of any ambiguity or inconsistency in or between the documents which are part of the contract.

The assumption is that it is likely that the Project Manager in conjunction with other consultants may have been appointed by the Employer to prepare the Scope. In order to prepare the Scope adequately the NEC include in their user guide: Preparing and Engineering and Construction Contract Volume 2 (Institution of Civil Engineers, 2017) an entire section on how to prepare the Scope, which details the status of the Scope, the drafting of the Scope, the ECC references to the Scope, the Client's Scope and Scope provided by the Contractor for its design. According to the above referenced user guide the Scope should not contain any information which repeats, contradicts or creates and ambiguity with the information provided in the Contract Data or with the ECC itself.

The consequence of non-compliance by the Project Manager with respect to a notification relating to the identification of an ambiguity or inconsistency in or between any of the documents which are part of the contract occurs under clause 60.1(18) – breach of contract by an agent of the Employer, as the Project Manager did not meet its obligation.

12.7.2.13 Issues an instruction to resolve an ambiguity or discrepancy (Core Clause 17.1)

The above clause 17.1 requires the Project Manager to resolve an ambiguity on inconsistency with an instruction. According to Thomas (2012) the intention of this clause is to ensure that such matters are not referred to a dispute resolution process, but rather provides the Project Manager with an effective contractual tool to ensure that the contract proceeds with minimal disruption should such an ambiguity or inconsistency arises.

There are however some exceptions to this resolution of ambiguities or inconsistencies in the contract, in that ambiguities or inconsistencies in terms of the Site Information in

terms of clause 60.3 states that the Contractor is assumed to have taken into account the physical conditions more favourable to doing the work; and under clause 60.7 the Bill of Quantities is taken as correct if there is a compensation event resulting from an inconsistency between the Bill of Quantities and another document.

The consequence of non-compliance by the Project Manager with respect to an instruction correcting an ambiguity or inconsistency in or between any of the documents which are part of the contract occurs under clause 60.1(18) – breach of contract by an agent of the Employer, as the Project Manager did not meet its obligation.

12.7.2.14 Gives an instruction to change the Scope on agreement with Contractor's notification that the Scope includes an illegal or impossible requirement (Core Clause 17.2)

In terms of clause 17.2 once such a matter has been identified the Project Manager is required to issue an instruction to the Contractor to change the Scope, the result of which is ordinarily a compensation event in terms of clause 60.1(1) for the Employer's Scope; and for the Contractor's Scope the compensation event will not be applicable under the second bullet point of clause 60.1(1), or in terms of clause 61.4 due to a fault of the Contractor the Prices, the Completion Date and the Key Dates are not to be changed.

Egglestone (2006) contends that the clause is not a frustration clause, as it is of the assumption that the contract is able of being performed, with the clause likely applying to things which are both legally and physically impossible to perform, but which are of such a nature that it can rectified by change.

The consequence of non-compliance by the Project Manager with respect to an instruction notifying that the Scope includes an illegal or impossible requirement occurs under clause 60.1(18) – breach of contract by an agent of the Employer, as the Project Manager did not meet its obligation.

12.7.2.15 Instructs the Contractor how to deal with an event that constitutes Prevention, if such an event occurs (Core Clause 19.1)

The NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) refers to 'Prevention' in the sense that they are 'force majeure' situations, with Egglestone (2006), Evans (2017), Rowlinson (2011) and Thomas (2012) all in agreement of the same principal contained in the user guide: "*These are significant, unexpected events causing major problems to a project that prevent it from being completed on time, or at all.*"

The clause includes for two tests for such an event:

i. "*neither Party could prevent the event;*
ii. *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 it.*"

In terms of the contract, no specific notification is required by either the Project Manager or the Contractor for an event that constitutes Prevention, however the same event will likely have been entered into the Early Warning Register in terms of clause 15, with the event being dealt with in the first instance as a compensation event in terms of clause 60.1(19) – the result of which is that both the time as well as the cost related to the event is borne by the Employer. Accordingly, the Employer has a remedy in terms of clause 91.7 to terminate the contract based on the Prevention event.

12.7.2.16 Accepts (or not accepts) a replacement key person (Core Clause 24.1)

In terms of the contract and according to Egglestone (2006), Evans (2017), Rowlinson (2011) and Thomas (2012) the Project Manager is required to assess the relevant experience and qualifications of the Contractor's proposed replacement key person and either accept or not accept the proposal and give reasons for its non-acceptance. According to Thomas (2012) it could be argued that the reasons for non-acceptance gives the Project Manager carte blanche in not accepting the proposed key person, as it could be argued that no other person has the same experience as the person required to be replaced, as no one else has been employed on this particular project – although that is seemingly not the intention of the wording of the clause. To this end one may argue for the case of clause 10.2 "*act in a spirit of mutual trust and co-operation*" to obviate the situation where the Project Manager makes use of such a reason.

The NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) gives great advice in this specific case in that it suggests the Project Manager meet the proposed individual in question in order to assist with its assessment.

If the Project Manager rejects the proposed replacement key person for any other reason than those permitted in clause 24.1 the Contractor may notify a compensation event in terms of clause 60.1(9) – A reason for not accepting the person stated in the contract is that their relevant qualifications and experience are not as good as those of the person who is to be replaced.

12.7.2.17 Assesses any cost incurred by the Client as a result of the Contractor not providing the services and other things which it is to provide (Core Clause 25.2)

In terms of the contract the Project Manager is required to assess any cost incurred by the Employer as a direct result of the Contractor not providing the services and other things which it is to provide. According to Thomas (2012) the clause mainly relates to which Party provides which service, for example: water, electricity, access roads, cranes, hoists, ablution facilities, and the like; to this end the Employer may require of one Contractor to provide specific services for the enjoyment of other Contractors which may be also be contracted for the bigger project.

Figure 41, as contained in the NEC4 flow charts: Engineering and Construction Contract flow chart (Institution of Civil Engineers, 2017) shows the process flow for the Contractor on working with the Employer and others, as well as the contractual recourse:

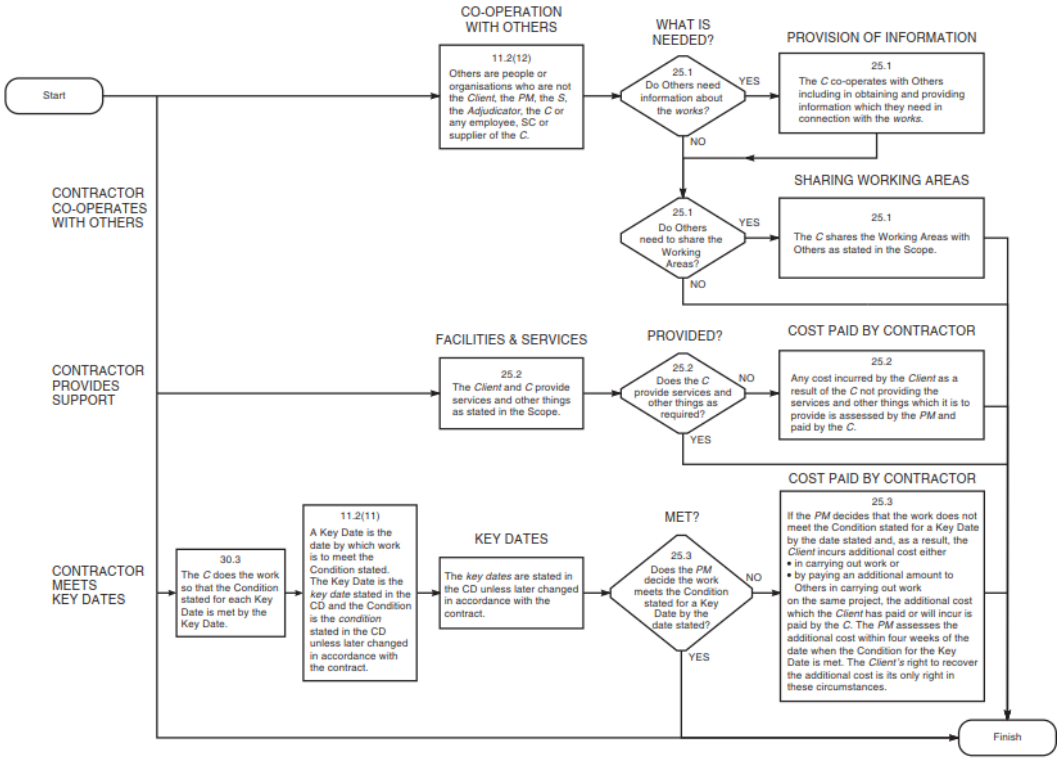


Figure 41 - Working with the Employer and others (NEC4) (Institution of Civil Engineers, 2017)

12.7.2.18 Decides whether the work meets Condition stated for a Key Date (Core Clause 25.3)

At the time the Contract Data is prepared careful planning is required by the Employer, as the Contract Data is required to clearly state both the Key Date and the required

Condition against which the Project Manager makes its assessment, with both Key Date and Condition as is defined in clause 11.2(11) – if none are so indicated, this obligation is not applicable. The Contractor is required in terms of clause 30.3 to do the work so that the Condition stated for each Key Date is met by the Key Date.

Key Dates can be changed in a similar fashion as completion dates are changed through the compensation event procedure and may also be subject to the acceleration quotation and Early Warning mechanisms.

According to Thomas (2012) Key Dates are particularly useful when different Contractors are employed for different packages in the bigger projects, as each Contractor will in such a case have different milestone dates (that is Key Dates) by when certain work has to be completed or in a particular condition in order for follow-on Contractors to carry on with their scope of work.

12.7.2.19 Assesses the additional cost which the Employer has paid or will pay within four weeks of the date when the Condition for the Key Date is met (Core Clause 25.3)

This obligation for the Project Manager ties back to the requirement for the Project Manager to decide whether the work meets the Condition stated for a Key Date, with the Project Manager being required to make its assessment within four weeks of the date when the Condition for the Key Date is met.

As is noted by Thomas (2012) and in the NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017), the cost is only those stated in the contract (that is carrying out the work; and by paying an additional amount to Others in carrying out work) and does specifically not include for consequential loss or such additional cost incurred by the Employer owing to the Contractor not having the work in the condition required on the Key Date.

According to Evans (2017) the contract is silent on what the remedy is for the Employer should the Project Manager fail in its obligation to assess the amount due within four weeks.

12.7.2.20 Accepts (or not accepts) a proposed Subcontractor (Core Clause 26.2)

In terms of the contract the Project Manager is obliged to either accept or not accept (stating its reasons) a subcontractor proposed by the Contractor. A subcontractor is as is defined in clause 11.2(19), this notably excludes labour only subcontractors. As with all

other required responses from the Project Manager, its response in this case shall be in terms of clause 13.1 within the period for reply.

A notable difference between the NEC and many other standard form contracts (and in the case of this research report the JBCC PBA and the FIDIC Red Book) is that the NEC4 ECC does not make provision for the nomination of subcontractors, which is according to the NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) to the historic legal and practical problems with regard to accountability of the same. In accordance with clause 26.1 the Contractor is fully responsible for all of the aspects of the works as if he/she has not subcontracted at all.

The Contractor may notify a compensation event in terms of clause 60.1(9) if the Project Manager rejects the proposed subcontractor for any other reason than those permitted in clause 26.2 – A reason for not accepting the Subcontractor is that the appointment will not allow the Contractor to Provide the Works. According to Thomas (2012) the word 'will' is used and must not be confused with 'may', as such the Project Manager has to be certain that the proposed subcontractor WILL not allow, not MAY not allow – this could potentially create some interesting debates over the capability or capacity of the proposed subcontractor in question.

12.7.2.21 Accepts (or not accepts) the proposed conditions for a proposed subcontract (Core Clause 26.3)

In accordance with the contract and NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017), this clause does not require the Contractor to submit an NEC subcontract for approval by the Project Manager, provided that the NEC subcontract is not amended, or if amended the amendments are exactly in accordance with that of the ECC, as this will ensure that the obligations and liabilities are comparable between the Employer-Contractor and Contractor-Subcontractor contracts. What is of relevance is that when using NEC contracts, the Contractor is not obliged to use the NEC Engineering and Construction Subcontract, the use of the Engineering and Construction Short Subcontract, the Professional Services Contract or the NEC4 Professional Services Short Contract can all be used; this of course is dependent on the type of service that the Contractor seeks to subcontract. According to Thomas (2012) the probable reasoning behind the automatic approval of NEC contracts is that it is an effective project management tool to control cost and time.

The reasons for which the Project Manager does not accept the subcontract documents is that: "*their use will not allow the Contractor to Provide the Works or they do not include a statement that the parties to the subcontract act in a spirit of mutual trust and co-operation.*".

According to Evans (2017) the reason "*their use will not allow the Contractor to Provide the Works*" could potentially cause some delays, especially if the Project Manager does not substantiate its reason with the necessary fact as to why he/she believes the proposed subcontractor will (again not may…) allow the Contractor to Provide the Works – this could potentially lead to a dispute if the Project Manager does not have the necessary facts.

The Contractor may notify a compensation event in terms of clause 60.1(9) if the Project Manager rejects the proposed subcontract documents for any other reason than those permitted in clause 26.3.

12.7.2.22 Names others to whom the Contractor provides access to work being done and to Plant and Materials for the contract (Core Clause 27.2)

In terms of the contract the Project Manager has the right to name others to whom the Contractor is required to provide access to work being done and to Plant and Materials for the contract. According to the NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) the Project Manager may not have had all of the information related to others at the starting date, as the Contractor may be required to prepare some of the design, or it could be that others store Plant and Materials outside of the working areas – these parties would certainly not reasonably have been known by the Project Manager before the time; as such he/she may name them during the contract in order to attain access for whatever the reason may be, whether it be to inspect and test the work, or to determine progress.

The contract does not have any remedy if the Project Manager does not name Others; should he not so name others it could be to the Employer's detriment.

12.7.2.23 Accepts (or not accepts) a programme submitted to him/her (Core Clause 31.3)

The Project Manager has an obligation to notify the Contractor within two weeks of the submission of the programme of its acceptance or non-acceptance of the programme, and if not accepted state its reasons in terms of the contract. The reasons for the Project Manager not accepting the programme submitted are: "*the Contractor's plans which it*

shows are not practicable, it does not show the information which the contract requires (refer to clause 31.2 for requirements for the programme the Contractor submits for acceptance)*, it does not represent the Contractor's plans realistically or it does not comply with the Scope*".

The result of non-compliance with the time period is dealt with in terms of the NEC4 in that the Contractor may notify the Project Manager of its inaction and if the Project Manager's inaction continues for a further one week after the notification, the Programme is treated as accepted by the Project Manager. Note that this is a discretionary obligation on the Contractor, and if not acted on the Contractor does not enjoy the right of deemed acceptance as stated above. However should the Contractor decide not to notify he/she still has the right of a compensation event in terms of clause 60.1(6): "*The Project Manager or the Supervisor does not reply to a communication from the Contractor within the period required by the contract*", although according to the NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) what both the Contractor and the Project Manager want (and need) is a an accepted programme. The same document reiterates that this is a particular area where the Contractor and the Project Manager need to collaborate in order to achieve the best quality programme.

Should the Project Manager not accept the programme submitted and use any other reason that those four reasons stated in clause 31.3 the Contractor has the right to a compensation event in terms of clause 60.1(9): "*The Project Manager withholds an acceptance … for a reason not stated in the contract*".

***Although not an obligation in terms of the above clause and possibly a deviation from the intention of the research report, it is truly important to note that the programme requirements is a large part of why the NEC4 works as a contract which promotes a stimulus to good management, with a specific reference to clause 31.2 and the requirements it states the Contractor needs to show on each programme for acceptance – the reader is urged to study the same clause and contemplate the same.

12.7.2.24 Certifies the date upon which the Employer takes over any part of the works and its extent within one week of the date (Core Clause 35.3)

Take Over is the date from which the Employer in terms of clause 80.1 assumes the liability for loss or wear or damage to the works. According to Thomas (2012) clause 35.3 is to be read with clause 13.1: "*communicate in a form that can be read, copied and*

recorded…", as well as clause 13.6: "*…Project Manager issues certificates to the Client and the Contractor…*", with the obligation on this clause 35.3 being that the Project Manager issues the certificate within one week of the Employer taking over any part of the works and state the extent of the take over in the same certificate.

Should the Project Manager certify take over before both Completion and the Completion Date, then the remedy to the Contractor would be a compensation event in terms of clause 60.1(15): "*The Project Manager certifies take over of a part of the works before both Completion and the Completion Date*". If the Contractor has not achieved Completion by the Completion Date and is paying delay damages, then in terms of secondary option clause X7.3 if the employer takes over part of the works the delay damages are reduced proportionally from the date the part is taken over.

Although there is no specific remedy for failure by the Project Manager to certify take over in terms of clause 35.3, the Contractor may notify the Senior Representatives under W1.1.

12.7.2.25 When accepting a quotation for acceleration change the Prices, Completion Date and Key Dates accordingly and accept the revised programme (Core Clause 36.3)

This is relatively simple clause in the sense that it the final step in the process of accepting a quotation for acceleration from the Contractor. At the time the Project Manager accepts the quotation for acceleration he/she also changes the Prices, Completion Date and Key Dates accordingly and accepts the revised programme. According to the NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) there is no further need for any further action by the Project Manager in terms of instructions, acceptances and the like.

Although the clause itself is silent on the matter, it may be likely that the Contractor has the right to a compensation event in terms of clause 60.1(6): "*The Project Manager or the Supervisor does not reply to a communication from the Contractor within the period required by the contract*", as the Contractor may argue that he/she incurred costs in the preparation of the quotation for acceleration.

12.7.2.26 Accepts (or not accepts) the quality policy statement or quality plan (Core Clause 40.2)

The concept of a quality policy statement or quality plan is a new one in the NEC4 ECC, as the NEC3 ECC did not make any reference to the same and referred to clause 4 as "Tests and Inspections", where the NEC4 refers to clause 4 as "Quality".

In accordance with the NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) the Contractor has in terms of clause 20.1 the duty to provide the works in accordance with the Scope, which means that in terms of clause 11.2(15): the Contractor "*Provide the Works means to do the work necessary to complete the works in accordance with the contract and all incidental work, services and actions which the contract requires*". In referring to 5.2.1.4 - Provides the Scope and specifically, there is an entire section (S600) in the NEC4 guide for the preparation of the Quality Management section in the Scope, as such the quality standards which are to be achieved by the Contractor must have been stated in the Scope. It is against this baseline that the Defects as defined in clause 11.2(6) is measured against, and against which the Contractor is required to prepare its quality policy statement or quality plan.

The Project Manager is obliged in terms of clause 40.2 to either accept or not accept the quality policy statement or the quality plan; as such if the Project Manager fails to act in terms of this clause the Contractor may notify the Senior Representatives under W1.1.

Clause 40.2 provides the Project Manager with one reason for not accepting the submission in that it "*it does not allow the Contractor to Provide the Works*", if the Project Manager states any other reason for its non-acceptance the Contractor has the right to a compensation event in terms of clause 60.1(9): "*withholds an acceptance … for a reason not stated in the contract*".

12.7.2.27 Assesses the cost incurred by the Employer in repeating a test or inspection after a Defect is found (Core Clause 41.6)

At any time a Defect is found there may be additional cost to the Employer, as a test or inspection has to be repeated for which the Employer may incur cost, be it in additional professional services or its own internal cost – to this end the Project Manager is responsible for the determination of this likely additional cost incurred. According to Thomas (2012) said cost is to form part of the amounts to be paid by the Contractor in terms of clause 50.1 and 50.2 with the next assessment.

If the Project Manager fails to act in terms of this clause the Contractor may notify the Senior Representatives under W1.1.

12.7.2.28 Arranges for the Employer to allow the Contractor access to and use of a part of the works which he/she has taken over if they are needed for correcting a Defect (Core Clause 44.4)

The obligation on the Project Manager in terms of clause 44.4 is of administrative nature only, as he/she is only required to arrange with the Employer for access to and use of a part of the works by the Contractor for which the Employer has taken over, but only if needed for correcting a Defect. According to Thomas (2012) there seems to be an exception in this clause 44.4 from the provision in clause 44.2 that the defects correction period commences on completion for defects which are notified before completion. In terms of this provision in clause 44.4 the defects correction period commences when the Employer provides access to and use of a part of the works (which has been taken over by the Employer), if this part of the works was taken over before completion the defects correction period commences prior to completion.

There is no remedy in the contract for the Project Manager not performing its obligation, this is likely to be found in the professional services contract the Employer has with the Project Manager, as the Employer will not be able to recover likely expenses if the Project Manager failed in its obligation.

12.7.2.29 Accepts (or not accepts) a quotation in respect of accepting a Defect (Core Clause 45.2)

Clause 45.2 goes hand in hand with clause 45.1 where the "*Contractor and the Project Manager may propose to the other that the Scope should be changed so that a Defect does not have to be corrected.*", according to Thomas (2012) this type of scenario may take place when the cost, inconvenience or time implication of correcting the defect outweighs the benefit from correcting the defect itself.

According to Egglestone (2006) this obligation on the Project Manager only comes into play if and when the Project Manager and the Employer are willing to consider changing the Scope, the Prices and the Completion Date. If the Project Manager accepts the Contractor's quotation, he/she is obliged to issue an instruction to change the Scope, the Prices and the Completion Date accordingly; note however that this is not a compensation event in terms of clause 60.1(1): "*…except… a change made in order to accept a Defect…*". The contract does not provide any specific format that the quotation is

required to be presented in; as such Evans (2017) contends that this quotation will become a commercial negotiation between the Contractor and the Project Manager.

12.7.2.30 Assesses the cost to the Employer of having an uncorrected Defect corrected by other people (access provided) (Core Clause 46.1)

In terms of risk allocation this clause certainly seems to be particularly in support of the Employer's rights, as the Project Manager according to the contract and as argued by Egglestone (2006), Evans (2017), Rowlinson (2011) and Thomas (2012) assesses the cost not based on the actual incurred cost by the Employer, but on its (the Project Manager's) own assessment of what the cost would be if another Contractor were to correct the defect, regardless of whether or not the defect has been corrected or whether the Employer has in fact paid any sum for the correction thereof. In this case the Contractor may have to rely on the obligation of the Project Manager and Employer in terms of clause 10.2 to "*act in a spirit of mutual trust and cooperation*"; as the assessed cost could be of such a nature that the Contractor cannot bear the same.

There is no remedy in the contract for the Project Manager not performing this obligation, this is likely to be found in the professional services contract the Employer has with the Project Manager, as the Employer will not be able to recover likely expenses if the Project Manager failed in its obligation. There is no obligation on the Project Manager to instruct a change to the Scope, as the contract deems the Scope to have been changed automatically to accept the Defect in terms of this clause.

Figure 42, as contained in the NEC4 flow charts: Engineering and Construction Contract flow chart (Institution of Civil Engineers, 2017) shows the process for correcting defects, but only those defects notified by the defects date:

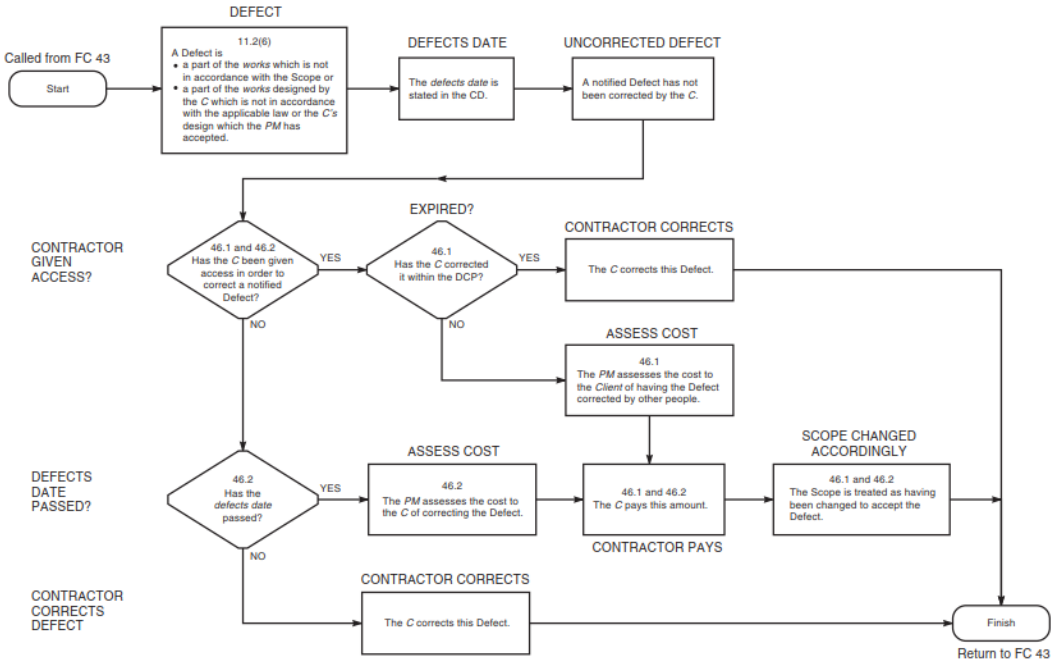


Figure 42 - Flow chart for correcting defects (NEC4) (Institution of Civil Engineers, 2017)

12.7.2.31 Assesses the cost to the Contractor of correcting an uncorrected Defect (access not provided) (Core Clause 46.2)

For a visual reference to the difference between the obligations and remedies found in clause 46.1 and 46.2 refer to Figure 42. The obligation for the Employer to pay the Contractor an assessed amount for correcting the Defect by him/herself may arise in situations where the Employer does not wish to grant the Contractor access to and use of the works (or a part thereof) – this could be for several reasons, but may be due to security reasons where the Contractor is not cleared to enter the Site after Completion. In any event, according to the contract and as confirmed by Egglestone (2006), Evans (2017), Rowlinson (2011) and Thomas (2012) the Project Manager assesses the cost the Contractor would have incurred in correcting the defect, not the actual cost the Employer incurred in correcting the defect. There is no obligation on the Project Manager to instruct a change to the Scope, as the contract deems the Scope to have been changed automatically to accept the Defect in terms of this clause.

Although there is no specific remedy for failure by the Project Manager to assess the cost to the Contractor terms of clause 46.2, it is likely that the Contractor has the right to a compensation event in terms of clause 60.1(18): "*A breach of contract by the Client which is not one of the other compensation events in the contract*"; although Andrew Baird has asserted that it would not be in the Contractor's best interest to use it.

12.7.2.32 Considers any application for payment the Contractor has submitted on or before the assessment date (Core Clause 50.4)

The Contractor is obliged in terms of clause 50.4 to submit its application for payment; however, the Project Manager in turn is also obliged to assess the amount due as if the Contractor has submitted its application, even if the Contractor has failed to submit the same.

This all seems relatively one sided until the remedy to the Employer is considered: the Project Manager certifies the lesser of the "*the amount the Project Manager assesses as due at the assessment date, assessed as though the Contractor had submitted an application before the assessment date, and… the amount due at the previous assessment date*", the result of which is that the Project Manager is contractually obliged to make its assessment, but the Contractor will not receive any money if he/she fails to submit its application, as the current assessment of the PWDD will ordinarily be more than the amount due at the previous assessment . In accordance with NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) it may even be that the current assessment includes for delay damages retained (in terms of secondary option clause X7) and if the same exceeds the current increase in the PWDD the Contractor will be liable to pay the Employer a sum of money, as this amount will be less than the previous assessment.

Thomas (2012) argues that the Project Manager is required to make its assessment of the amount due fairly and impartially between the Contractor and the Employer, as was ruled in *Costain v Bechtel [2005] EWHC 1018*.

The risk to the Employer for the Project Manager not meeting its obligation in determining the first assessment date and amount due as well as subsequent amounts due is that the Contractor has the right to refer the matter as a dispute to the Senior Representatives and in terms of clause 90.1 and 91.4: "*The Contractor may terminate if the Client has not paid an amount due under the contract within thirteen weeks of the date that the Contractor should have been paid (R16)*".

12.7.2.33 Retains one quarter of the Price for Work Done to Date until the Contractor has submitted a first programme for acceptance (Core Clause 50.5)

This obligation on the Project Manager exists only in instances when the Employer did not require the Contractor to submit a program with the Contract Data Part Two as part of the Contractor selection process during the adjudication of the tenders submitted.

Thomas (2012) likens this clause to a carrot-and-stick approach where the Contractor is provided with a carrot in that he/she is required to submit its programme before the date so identified in the Contract Data Part One (which has to be prior to the first assessment date) in order to not have one quarter retained from the PWDD. Egglestone (2006) warns that it is only one quarter deducted from the PWDD, not from any other components of the amount due. Likewise, it provides the Project Manager with a stick to force the Contractor to submit its first programme for acceptance (if no programme was provided in the Contract Data Part Two) within the period stated in the Contract Data, with the condition that the programme is required to show the relevant information which the contract requires.

In accordance with NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) it is not a requirement for the Project Manager to accept the programme in order for the one quarter deduction to either not be retained or returned, rather the Contractor is simply required to submit the same in terms of the contract.

There is no remedy in the contract for the Project Manager not performing its obligation, this is likely to be found in the professional services contract the Employer has with the Project Manager, as the Employer will not be able apply the deduction if the Project Manager failed in its obligation.

12.7.2.34 Corrects any incorrectly assessed amount due in a later payment certificate (Core Clause 50.6)

The Project Manager is obliged in terms of clause 50.6 to correct any incorrectly assessed amount due in later payment certificates, with interest being charged on the correction amount in terms of clause 51.3. The interest rate is the rate as stated in the Contract Data Part One (which is a minimum of 2% per annum more than the bank rate).
Egglestone (2006) has some criticism of this clause in that he/she argues that the incorrectly assessed amount due that is to be corrected is subjective, with the result that

this clause is rendered ineffective in its remedy, as the Project Manager is not likely to concede to a mistake having been made in an earlier certificate, except perhaps through a dispute.

Hughes (2016) contends that this interest amount will not always be in favour of the Contractor: in instances where the Project Manager certified too little the interest will be in favour of the Contractor; whereas instances where the Project Manager has certified too much the interest will be in favour of the Employer and payable by the Contractor.

12.7.2.35 Corrects mistakes in the Bill of Quantities which are due to the reasons stated (Core Clause 60.6)

The Contract Data Part One states the method of measurement which is applicable to the contract, with the Project Manager's obligation in terms of clause 60.6 being that of having to correct mistakes in the BoQ if there was a departure from the method of measurement or if there exists and inconsistency or ambiguity; this results in a compensation event which may lead to reduced Prices. According to Thomas (2012) the wording of the clause makes it possible to reduce the Prices, but it does not render it impossible to increase the Prices.

12.7.2.36 Notifies the Contractor of a Compensation Event due to an instruction for a change in Scope (Core Clause 61.1)

In terms of clause 61.1 the Project Manager is obliged to notify the Contractor of a compensation event which arises from its (or the supervisor's) instruction or notification, issuing a certificate or changing an earlier decision at the time such communication. According to the contract and as confirmed by Thomas (2012) this clause 61.1 covers such instructions, notifications, issuing of certificates and changes of earlier decisions as covered in clauses 60.1(1), (4), (7), (8) and (10) and potentially (17).

In accordance with clause 13.7 the Project Manager is required to give its notification separately to the actual communication leading to the compensation event, however the time bar which the Contractor is obliged to comply with does not apply to the Project Manager.

Should the Project Manager fail in its express obligation to notify the Contractor of the compensation event in terms of clause 61.1, Evans (2017) argues the onus rests on the Contractor to notify the Project Manager of said compensation event in terms of clause 61.3 second bullet point: "*the Project Manager has not notified the Contractor*".

12.7.2.37 Notifies Contractor whether an event notified by the Contractor is a compensation event (Core Clause 61.4)

Clause 61.4 provides the Project Manager with a number of obligations; those firstly being that he/she is obliged to respond (as always in terms of clause 13.7) to the notification within one week or a longer period to which the Contractor has agreed (presumably requesting such prolonged period before the initial one week has lapsed).

If the Project Manager fails to respond Evans (2017), Rowlinson (2011) and Thomas (2012) argues in terms of clause 61.4, the Contractor's remedy will be that he/she may notify the Project Manager of said failure, if the failure to respond continues for a further two weeks subsequent to the notification of the same then the Contractor's notification is treated as having been accepted, with the result being that the event will be treated as a compensation event and that the Contractor is deemed to be instructed by the Project Manager to submit a quotation for the same.

Secondly the Project Manager is obliged to consider the Contractor's notification and to notify the Contractor that the Prices, the Completion Date and the Key Dates are not to be changed if the event notified meets any of the following criteria: it arises from a fault of the Contractor; it has not happened and is not expected to happen; it has not been notified within the timescales set out in these conditions of contract; it has no effect upon Defined Cost, Completion or meeting a Key Date; or it is not one of the compensation events stated in the contract, with the provision that the Project Manager is required to state its reasons for the above rejection.

12.7.2.38 Instructs the Contractor to submit quotations (if event notified by Contractor is a compensation event) (Core Clause 61.4)

In terms of clause 61.4 and continuing from 12.7.2.37 in the third instance the Project Manager is obliged to notify the Contractor that the event is a compensation event and instructs the Contractor in the same notification to submit its quotation for the compensation event.

The Project Manager in turn is obliged to respond to the quotation submitted by the Contractor within the time allowed, if he/she fails to do so the Contractor has a remedy in terms of clause 62.6 where the quotation is ultimately accepted as notified by the Contractor if the Project Manager continues to fail for another two weeks in its obligation to respond to the quotation, but only if the Contractor notified the Project Manager of its failure to respond to the quotation submitted; if not notified the remedy is null and void.

12.7.2.39 Decides whether the Contractor gave an early warning which an experienced Contractor could have given and notify if necessary (Core Clause 61.5)

The obligation on the Project Manager is particularly subjective, as the Contractor may argue against the Project Manager's finding that the Contractor ought to have acted in the way an experience Contractor is expected to. In any event, the Project Manager is obliged to decide during the one week for response whether the Contractor could have given an early warning in terms of clause 15.1 for the event which is now being claimed as a compensation event. If the Project Manager so finds that the event ought to have been included in the early warning register, then the Project Manager is obliged to notify the Contractor of this finding in its notification to the Contractor; the effect of which is twofold.

In assessing the compensation event the Project Manager in terms of clause 63.7 assesses the compensation event as if an early warning had been given by the Contractor

In the first instance the Contractor may not be entitled to an increase in the Prices or more time if any of the resultant effects of the event could have been mitigated.

In the second instance the Project Manager may find that if the event was in fact dealt with as an early warning event and the result of the event which has now occurred could have been of such a nature that there would be no event at all he/she notifies the Contractor of the same and the event is no longer considered to be a compensation event.

Should the Project Manager fail in its obligation to address the early warning which an experienced Contractor could have given its right in terms of clause 63.7 where he/she assesses the compensation event as if an early warning was given is lost and any possible remedy in that respect for the Employer is lost.

12.7.2.40 Does not notify a compensation event after the defects date (Core Clause 61.7)

Subsequent to the defects date the Project Manager and the Supervisor no longer have the authority to notify the Contractor of any compensation event, as related to those items contained in clauses 60.1(1), (4), (7), (8) and (10) and potentially (17). The defects date being a set time subsequent to the completion date, as provided for in the Contract Data Part One. This does however not prevent the Contractor to notify of the same, as the defects date may be within the 8-week period that the Contractor has for its notification of a compensation event.

There is no risk of the Project Manager not complying with its obligation in this regard, as the Contractor has the right to refuse any such notification that the Project Manager may issue.

12.7.2.41 Discusses with the Contractor different ways of dealing with a compensation event (Core Clause 62.1)

The obligation to the Project Manager in terms of clause 62.1 is that he/she is required to discuss with the Contractor different practicable ways of dealing with the compensation event in order to reach the best solution for the Employer, not just in terms of time and cost, but also technical solutions; following which he/she may instruct the Contractor to submit such quotations, which argued by Rowlinson (2011) is implied to include the description of the alternative discussed. The NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) states that the reasoning for the Project Manager to first discuss the different ways of dealing with the compensation event is to prevent a scenario where the Contractor wastes its resources in preparing quotations without the same having been discussed between themselves and the Project Manager.

In accordance with clauses 61.1 and 61.2 and confirmed by Thomas (2012) this does not preclude the instruction by the Project Manager to the Contractor to submit the quotation in the first case. In terms of clause 11.2(22) the cost of preparing such alternative quotations as may be required by the Project Manager is borne by the Contractor and cannot be claimed under the Defined Cost.

The consequence of non-compliance by the Project Manager with respect to the requirement for the discussion of alternative quotations for the compensation event is not expressly stated; as such the Employer may have a case against its Project Manager if it is later found that the Project Manager's inaction in this regard has resulted to additional cost to the Employer.

12.7.2.42 Replies to the submission of a quotation within two weeks (Core Clause 62.3)

The NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) states that the intention behind the short time period for reply is to promote efficient contract management and that the Project Manager should view the two weeks as the maximum period and attempt to respond prior to the this maximum period. The three types of reply are that of: a notification of acceptance of

the quotation, an instruction to submit a revised quotation or that the Project Manager will be making the assessment.

The risk to the Employer for the Project Manager not meeting its obligation to respond to the quotation within two weeks (or at all) is that in terms of clause 62.6 the Contractor is required notify the Project Manager of its failure in this regard in order for the Contractor to enjoy its right of acceptance of the quotation if the failure by the Project Manager continues for a further two weeks after the required notification by the Contractor.

12.7.2.43 Explains the reasons for instructing a revised quotation (Core Clause 62.4)

Should a situation arise where the Project Manager requires a revised quotation, the Project Manager is obliged to explain to the Contractor its reasons for the required revised quotation.

The consequence of non-compliance by the Project Manager with respect to stating the reason for the required revised quotation for the compensation event, the instruction would not be valid according to Thomas (2012), in which case the three weeks period for reply by the Contractor would not be applicable. Moreover, the reply by the Project Manager would not be valid and the Contractor's remedy in such a case would be that in terms of clause 62.6: "*If the Project Manager does not reply to a quotation within the time allowed… Contractor's notification it is treated as acceptance by the Project Manager of the quotation.*"

12.7.2.44 Notifies the Contractor of the agreed extension (Core Clause 62.5)

The time periods for the Contractor's submission of a quotation related to a compensation event and the Project Manager's required response is stated in clause 62.3, however there may be instances where the compensation event has far-reaching consequences or said quotation and response requires more time due to its large scale. For such cases the Contractor and Project Manager are required to agree to an extension to either the submission or response period within the period, following which the Project Manager is obliged to inform the Contractor of the same, as always in terms of clauses 13.1 and 13.7. Thomas (2012) advises that the Project Manager ought to be cautious when considering such extensions, as there may be far reaching consequences in terms of a number of other requirements in the contract if the same is agreed, those items affected are the updated programme to be submitted by the Contractor, as well as the determination of the effect of later compensation events.

The failure of the Project Manager to notify the Contractor of the agreed extension could result in the matter being referred to the Senior Representatives in terms of clause W1.1(1) and (4), as the agreement was reached, but the Project Manager failed in its obligation to put the same in writing as is required in the contract.

12.7.2.45 If a change to the Scope makes the description of the Condition for a Key Date incorrect, correct the description (Core Clause 63.11)

In terms of clause 14.3 the Project Manager may give an instruction to the Contractor to change the Scope or a Key Date, however in terms of clause 63.11 the Project Manager is required to correct the description of the Condition for a Key Date if the change instructed caused the description of the Condition for said Key Date (as contained in the Contract Data Part One) to be incorrect. According to Rowlinson (2011) the time and cost effect of this correction in the Condition change will be considered with the offending compensation event in terms of clause 60.1(1).

The failure of the Project Manager to change the description of the Condition for said Key Date may result in the matter being referred to the Senior Representatives in terms of clause W1.1(1) and (4).

12.7.2.46 Instructs the Contractor how to deal with an object of value or of historical or other interest found within the Site (Core Clause 73.1)

In terms of this clause 73.1 the Project Manager has the obligation to instruct the Contractor how to deal with an object of value or of historical or other interest found within the Site, which in accordance with clause 60.1(7) is a compensation event. In accordance with the contract the Contractor does not have any title to an object of value or of historical or other interest within the Site and does not move the object without the required instruction from the Project Manager. According to Egglestone (2006) both of the above listed clauses are open to some abuse, however that being said it is certain that this is such a case where clause 10.2 will have to come into play.

Failure by the Project Manager to instruct the Contractor how to deal with such an item will likely result in a dispute being referred to the Senior Representatives in terms of clause W1.1(1).

12.7.2.47 Accepts (or not accepts) the Contractor's insurance certificates (Core Clause 84.1)

According to clause 84.1 and confirmed by Thomas (2012) the Contractor does not provide the Project Manager with copies of the insurance cover, instead he/she provides the Project Manager with a certificate by the insurer that the insurance cover is in place.

This clause 84.1 provides the Project Manager with two criteria against which he/she is required to measure the insurance for its acceptance; the first being that the insurance cover provided by the Contractor is in terms of the contract and the second that the insurance provider's commercial position is strong enough to carry the insured liabilities. The insurance is required to be taken out by the Contractor prior to the starting date and has to be demonstrated to be up to date on each renewal date of the insurance up to the defects date.

Any rejection by the Project Manager of the insurance cover provided for a reason other than that stated in clause 84.1 will be a compensation event in terms of clause 60.1(9): "*...for a reason not stated in the contract*".

Failure by the Project Manager in its assessment whether the insurance cover provided was adequate will not necessarily result in him/her being liable for the possible resultant losses suffered by the Employer as a consequence of a lack of insurance, as is confirmed by Thomas (2012) and as ruled in the *South Australia Asset Management Corp v York Montague Ltd [1996] 3 All E.R. 365*.

12.7.2.48 Submits certificates for insurances provided by the Employer to the Contractor for acceptance before the starting date and afterwards as the Contractor instructs (Core Clause 86.1)

As is the case in clause 84.1 the certificates (and not the policies) for insurance for the insurance required by the Employer as stated in the Contract Data Part One is required to be submitted to the Contractor by the Project Manager for the Contractor's acceptance of the said insurance cover, failing which the Contractor may procure additional insurance at the Employer's expense in terms of clause 86.3.

12.7.2.49 Issues a termination certificate promptly if the reason given complies with the contract (Core Clause 90.1)

The Project Manager has two obligations in terms of clause 90.1, firstly he/she is required to determine whether the Party which notified (of course always in terms of clause 13.1

and 13.7) its intention to terminate the Contractor's obligation to provide the works (works provided in terms of clause 11.2(15)) gave reasons for termination which are in valid under the contract, if satisfied that said requirement has been met Project Manager is in the second instance obliged to promptly issue a termination certificate to both Parties.

The reasons for termination are split between the Employer (R1-R15, R17, R18 and R20-22) and the Contractor (R1-R10, R16-R17 and R19-R20) as shown in the termination table contained in clause 90.2. What is of interest here is that there is no obligation on the Project Manager to determine whether the Party which notified its intention to terminate has good grounds for termination, instead the only obligation of the Project Manager is to determine whether the reason stated by said Party is a reason stated in terms of clause 90.1. The reasons for termination are those reasons (R1 to R22) as stated in clause 91 and shown in Table 33:

Table 33 – Termination table in terms of clause 90.2 (NEC4 ECC)

TERMINATION TABLE			
TERMINATING PARTY	**REASON**	**PROCEDURE**	**AMOUNT DUE**
The *Client*	R1–R15, R18 or R22	P1, P2 and P3	A1 and A3
	R17 or R20	P1 and P3	A1 and A2
	R21	P1 and P4	A1 and A2
The *Contractor*	R1–R10, R16 or R19	P1 and P4	A1, A2 and A4
	R17 or R20	P1 and P4	A1 and A2

According to Thomas (2012) clause 90.1 is silent as to what happens when either Party submits a notification for termination which is not for one of the reasons as contained in clause 91, accordingly the inference is that the contract is not terminated and that the Parties are obliged to continue performance in terms of the contract.

The question arises over what "promptly" means in terms of clause 90.1, Thomas (2012) argues that this should be prior to the lapse of the period for reply as stated in the Contract Data. The issue of the termination certificate by the Project Manager brings and end to the obligation of the Contractor to provide the works as is confirmed in clause 90.4, and sets into place a fresh set of obligation on the Parties in terms of core clause 9

Figure 43, as contained in the NEC4 flow charts: Engineering and Construction Contract flow chart (Institution of Civil Engineers, 2017) shows the termination process flow:

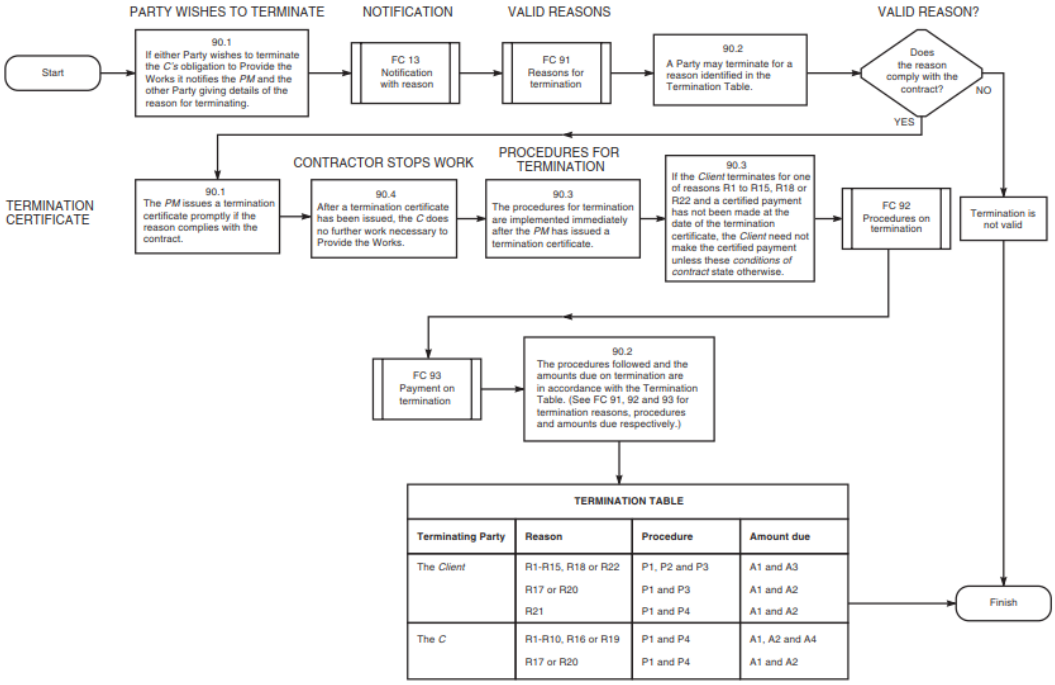


Figure 43 - Termination procedure under NEC4 ECC (Institution of Civil Engineers, 2017)

Although the contract is silent on the failure by the Project Manager to fulfil its obligation in terms of clause 90.1 it may be that the Employer replaces the Project Manager in terms of clause 14.4, as the magnitude of the obligation bestowed on the Project Manager is of such a nature in terms of clause 90.1.

12.7.2.50 Implement the procedures for termination immediately after issuing a termination certificate (Core Clause 90.3)

In terms of clause 92 there are four different procedures to follow (P1-P4) immediately after the Project Manager has issued a termination certificate, as stated in clause 90.3. Thomas (2012) states that 'immediately' means that there is no time for decision needed by the Project Manager and that it is a shorter period than 'promptly' as stated in clause 90.1.

The termination table contained in clause 90.2 and shown in Table 33 shows the appropriate procedure to follow for the specific reason for termination. The four procedures are summarised as follows:

i. P1 (clause 92.1): the Employer may complete the works;
ii. P2 (clause 92.2): assign the benefit of a subcontract to the Employer;
iii. P3 (clause 92.2): the Employer may use equipment which the Contractor has title to complete the works;

iv. P4 (clause 92.2): the Contractor leaves the working areas as well as the equipment.

Figure 44, as contained in the NEC4 flow charts: Engineering and Construction Contract flow chart (Institution of Civil Engineers, 2017) shows the procedures to follow after termination:

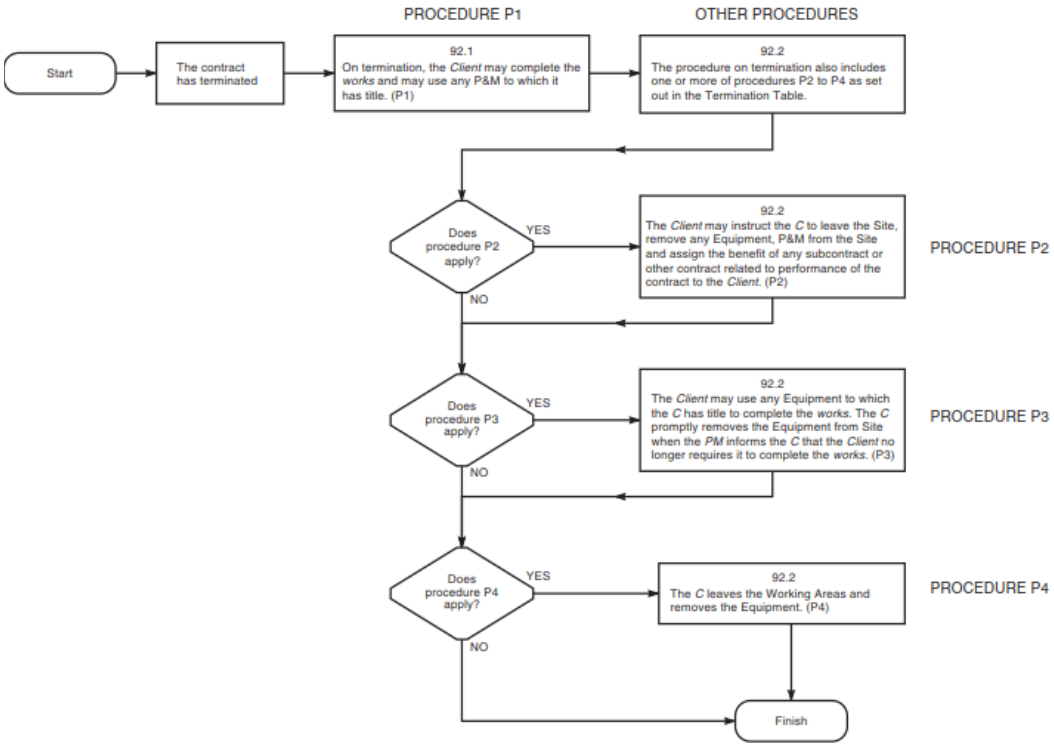


Figure 44 - Termination procedures P1-P4 under NEC4 ECC (Institution of Civil Engineers, 2017)

Although the contract is silent on the failure by the Project Manager to fulfil its obligation in terms of clause 90.3 it may be that the Employer replaces the Project Manager in terms of clause 14.4, as the magnitude of the obligation bestowed on the Project Manager is of such a nature in terms of clause 90.3.

12.7.2.51 Notifies that the Contractor has defaulted in one of the specified ways (Core Clause 91.2)

Following clause 90.1 and the associated termination table shown in Table 33 the following are the reasons for which the Project Manager is obliged to notify that the Contractor has not has not put one of the listed defaults right within four weeks of the date when the Project Manager notified the Contractor of the default:

i. Reason R11 applies solely to substantial breach of the Contractor's obligations, as such minor breaches are not grounds for termination. Curiously according to

Thomas (2012) the contract is silent on what substantial breach amounts to, as such the obligation is rather on the Project Manager to determine the same in the context of the works to be provided in line with the finding in *National Power Plc v United Gas Company [1998] All E.R. (D) 321* as to the meaning of 'material breach';

ii. Reason R12 relates to the non-provision of the bonds (in terms of clause X13) or guarantees (in terms of clause X4) which the Contractor is obliged to provide – this effectively extends the period within which the Contractor is obliged to submit the same with four weeks;

iii. Reason R13 relates to the appointment of a subcontractor for a substantial part of the work prior to the acceptance of such subcontractor by the Project Manager.

The risk to the Employer if the Project Manager fails in its obligation to notify that the Contractor has defaulted is that the Employer may be unknowingly be waiving its right to terminate for that reason.

12.7.2.52 Notifies the Employer that the Contractor has not put a specified default previously notified right within four weeks (Core Clause 91.2)

Refer to 12.7.2.51.

12.7.2.53 Notifies the Employer that the Contractor has defaulted in one of the specified ways (Core Clause 91.3)

Following clause 90.1 and the associated termination table shown in Table 33 the following are the reasons for which the Project Manager is obliged to notify that the Contractor has not has not stopped one of the listed defaults within four weeks of the date when the Project Manager notified the Contractor of the default:

i. Reason R14 relates to the Contractor substantially hindering the Employer or others;

ii. Reason R15 relates to the Contractor substantially breaking a health or safety regulation.

The risk to the Employer if the Project Manager fails in its obligation to notify that the Contractor has defaulted is that the Employer will lose its right to terminate.

12.7.2.54 Notifies the Employer that the Contractor has not stopped defaulting in a previously specified way within four weeks (Core Clause 91.3)

Refer to 12.7.2.53.

12.7.2.55 Notifies the Contractor of the extension that has been agreed (Core Clause W1.3(2))

In accordance with Secondary Option W1 an event giving rise to a dispute under or in connection with the contract is first referred to the Senior Representatives (as named in the Contract Data) in accordance with the Dispute Reference Table and can only be referred to the Adjudicator if the Senior Representatives cannot resolve the dispute.

Table 34 - Dispute reference table in terms of clause W1.1 (NEC4 ECC)

DISPUTE REFERENCE TABLE		
DISPUTE ABOUT	**WHICH PARTY MAY REFER IT TO THE *SENIOR REPRESENTATIVES*?**	**WHEN MAY IT BE REFERRED TO THE *SENIOR REPRESENTATIVES*?**
An action or inaction of the *Project Manager* or the *Supervisor*	Either Party	Not more than four weeks after the Party becomes aware of the action or inaction
A programme, compensation event or quotation for a compensation event which is treated as having been accepted	The *Client*	Not more than four weeks after it was treated as accepted
An assessment of Defined Cost which is treated as correct	Either Party	Not more than four weeks after the assessment was treated as correct
Any other matter	Either Party	When the dispute arises

In accordance with clause W1.3(2) the time for notifying and referring a dispute may be extended by the Project Manager, but only if the if the Contractor and Project Manager agreed to such an extension prior to the notification or referral becoming due. The obligation is on the Project Manager to notify (always in terms of clause 13.1 and 13.7) the Contractor of such extended period.

The Contractor may argue in terms of clause 10.1 that the Project Manager is required to act as is stated in the contract and secondly in terms of clause 10.2 that the Project Manager is required to act in a spirit of mutual trust and cooperation should he/she have agreed to such extension in terms of clause W1.3(2), but fail to notify the Contractor of the same.

Figure 45, as contained in the NEC4 flow charts: Engineering and Construction Contract flow chart (Institution of Civil Engineers, 2017) shows the flow for adjudication under Option W1:

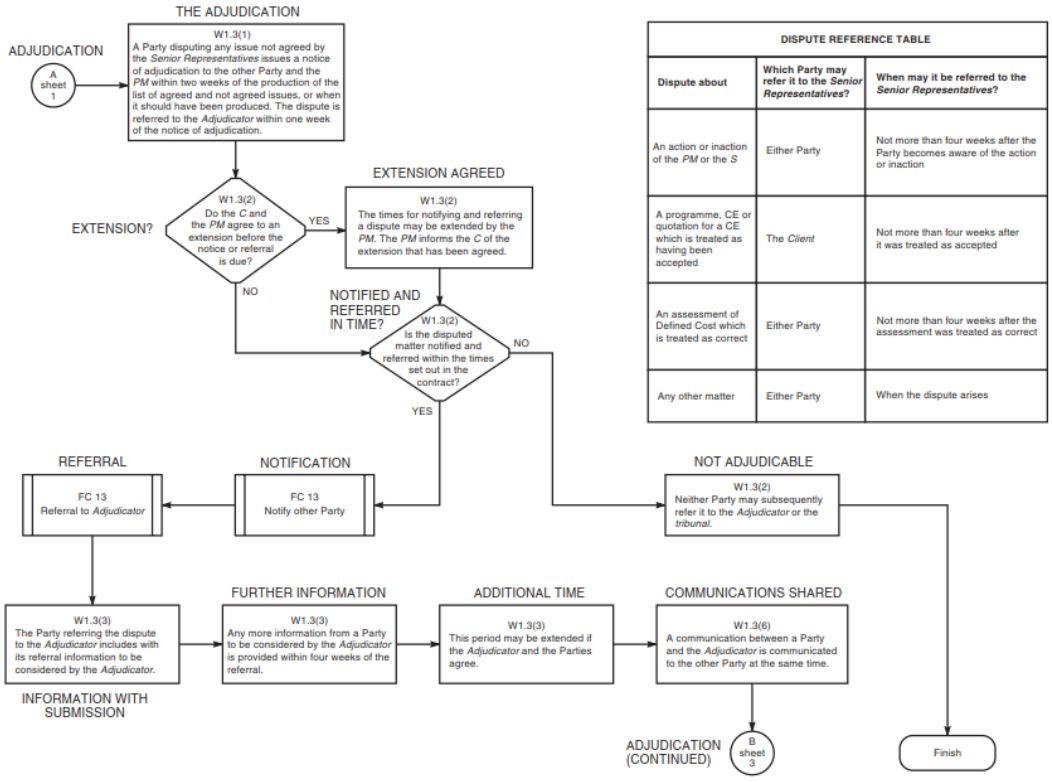


Figure 45 - Resolving disputes under Option W1 NEC4 ECC (Institution of Civil Engineers, 2017)

12.7.2.56 Proceeds as if the matter disputed was not disputed (Core Clause W1.3(9))

Refer to 12.7.1.17 - Proceed as if the matter disputed was not disputed (Core Clause W1.3 (9)), as this obligation counts as much for the Project Manager as it does for the Employer: *"…the Project Manager…proceed as if the matter disputed was not disputed*".

12.7.2.57 If the Employer has taken over part of the works, assesses the benefit to the Employer of taking over the part of the works as a proportion of the benefit to the Employer of taking over the whole of the works (Core Clause X7.3)

The delay damages are stated in the Contract Data Part One and is calculated for every day that Completion or Take Over (whichever is earlier) is later than the Completion Date, all in accordance with clause X7.1.

Figure 46, as contained in the NEC4 flow charts: Engineering and Construction Contract flow chart (Institution of Civil Engineers, 2017) shows the flow for Delay Damages calculation in terms of X7:

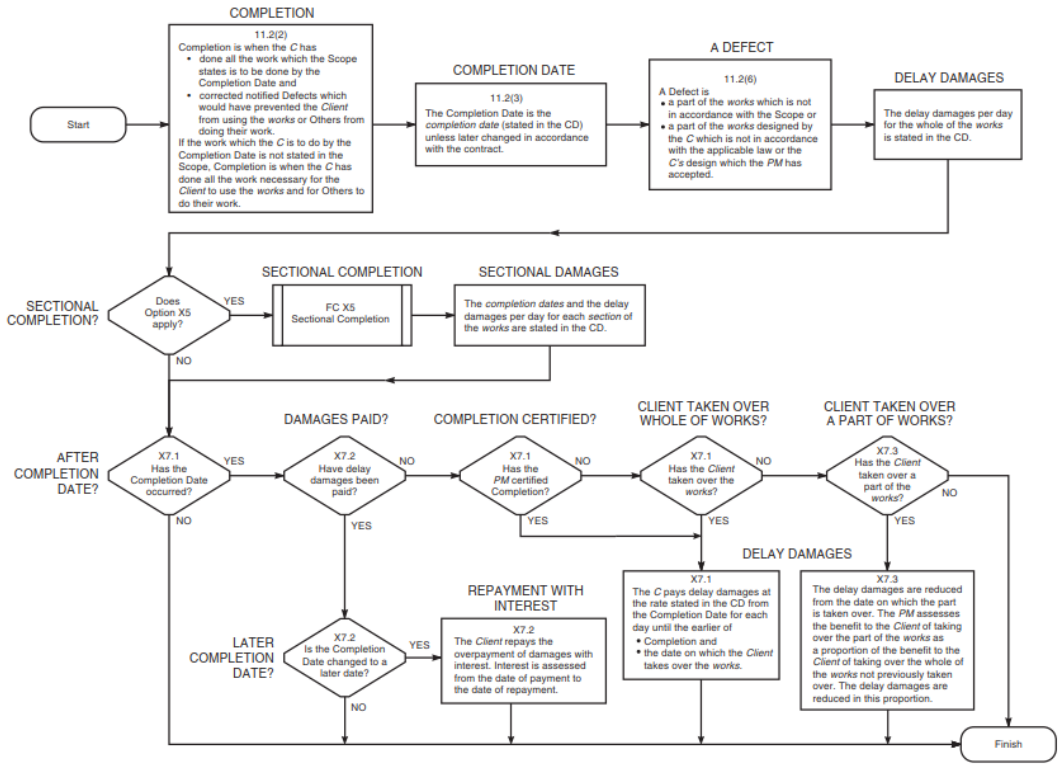


Figure 46 - Delay Damages process in terms of the NEC4 ECC (Institution of Civil Engineers, 2017)

In terms of clause 35.2 the Employer may use any part of the works before Completion has been certified, the result of which is that said portion of work is deemed to have been taken over by the client; the exceptions to this are twofold: firstly for a reason stated in the Scope and secondly to suit the Contractor's method of working. In such cases the works will not have been taken over by the Employer, instead he/she has the right to use the use works in those instances.

In terms of clause X7.3 there is according to Thomas (2012) a marked difference between the approach of the NEC when compared to other standard form contracts, in that the NEC does not relate the pro-rated change in damages to the value of the works remaining after the Employer has taken over a part of the works, instead it relates the proportion of damages to be levied (should the Contractor not complete on time) on the benefit to the Employer of taking over the part of the works as a proportion of the benefit to the Employer of taking over the whole of the works. Note that this is not in reference to sectional completion.

The NEC4 user guide: Managing an Engineering and Construction Contract Volume 4 (Institution of Civil Engineers, 2017) provides an excellent example as to how this proportion is to be calculated with Thomas (2012) cautioning that the assessment of the

Project Manager in this regard has to, as was found by the judge in *Costain v Bechtel [2005] EWHC 1018,* to be fair and impartial.

The example referred to above is shown as follows:

The contract is for the construction of a factory to build two types of widgets, types A and B. This has separate buildings with production lines for each type of widget and the *Client* calculates that it will make £5,000 per day profit out of type A and £3,000 out of type B. The *Client* decides that it wants Completion of both buildings to occur together and therefore sets the delay damages at £8,000. However, the *Client* takes over one of the buildings first and starts making the type A widgets. Meanwhile, the market price of both widgets has changed so that the *Client* assesses it will make £4,000 out of type A and £5,000 out of type B (total now £9,000).

The proportion of the new benefit of the part of the *works* still to be taken over to the new benefit of all of the *works* is now £5,000/ £9,000, i.e. five ninths. This proportion is then applied to the original level of the delay damages to provide the following delay damages for the remaining part of the *works* not yet taken over

£8,000 x 5/9 = £4,444.

Equation 1 - NEC4 ECC delay damages benefit change cost in terms of clause X7.3 (Institution of Civil Engineers, 2017)

This may not be a particularly simple task to perform, as Evans (2017) suggests that the assessment may be subject to challenge in adjudication and that it is difficult to see how this assessment can be made properly, as it is deemed by him/her to be wholly subjective in its nature. He/she goes on to state that if there is no actual benefit to the Employer, then there may be no reduction at all.

Should the Project Manager fail in its obligation in determining the benefit to the Employer for the take over of any part of the works not in accordance with the reasons in clause 35.2 and reduce the delay damages with the said proportion, the Contractor has the right to refer the matter as a dispute to the Senior Representatives in terms of clause W1.1(1) as a dispute about "*An action or inaction of the Project Manager…".*

12.7.2.58 Accepts (or not accepts) the bank or insurer which will provide the performance bond (Core Clause X13.1)

Although not the obligation in terms of this heading, it is of interest to note that the form for the performance bond is required to be provided in the Scope, with the amount related to the Performance Bond being stated in the Contract Data Part One.

This clause X13.1 provides the Project Manager with a reason in terms of the contract to accept or not accept the bank or insurer; that being that the bank or insurance provider's commercial position is strong enough to carry the insured liabilities.

Any rejection by the Project Manager of the bank or insurer for a reason other than that stated in clause X13.1 will be a compensation event in terms of clause 60.1(9): "*...for a reason not stated in the contract*".

12.7.2.59 Accepts (or not accepts) the bank or insurer which will provide the advance payment bond (Core Clause X14.2)

Although not the obligation in terms of this heading, it is of interest to note that the form for the advance payment bond is required to be provided in the Scope, with the amount related to the advance payment bond being stated in the Contract Data Part One.

This clause X14.2 provides the Project Manager with a reason in terms of the contract to accept or not accept the bank or insurer; that being that the bank or insurance provider's commercial position is strong enough to carry the insured liabilities.

Any rejection by the Project Manager of the bank or insurer for a reason other than that stated in clause X14.2 will be a compensation event in terms of clause 60.1(9): "*...for a reason not stated in the contract*".

12.8 Appendix 8 - Summary of the main features of the FIDIC Red Book

As for the JBCC PBA 5.0, the CIDB (2005) provides an excellent summary of the main features of the FIDIC 1999 Red Book, which is shown as follows (in verbatim) in Table 35:

Table 35 - CIDB summary of main features of the FIDIC Red Book (Construction Industry Development Board (CIDB), 2005)

Aspect	**Commentary**
Application	Building and Civil Engineering contracts
Provision for different contracting strategies	Construction: Building and Engineering works designed mainly by the Employer.
"Tender" vs "contract"	"Tender" included as part of the "Contract"
Structure	Separate documents with many common clauses repeated in each document. (Documents are structured around 20 similar clauses, which are adapted as required by each contract.
Design by either party	Intended to be by the Employer but contract provides for design by the Contractor to the extent specified in the contract. Parts designed by Contractor to be fit for purpose.
Limitation of liability	
Loss of revenue, loss of profit, indirect and consequential:	Capped at amount stated or contract sum if not stated, with exceptions. This cap applies to the Contractor only.
Other direct losses during the contract period:	Unlimited for defects to the extent which Contractor is responsible, uncertain for others.
Loss and damage to Employer's surrounding property:	Contractor liable, including for consequential loss, arising from breach of contract, negligence, or other legally actionable wrong.
Latent defects:	The contract is silent, hence covered by the law of the contract in which the site is situated.

Aspect	Commentary
Financial risk allocation	Employer carries quite a few risks Time and cost effect dealt with differently depending on the risk event. Some events do not allow for Contractor's profit. Engineer / Employer to determine (extra time & cost) by consultation in an endeavour to reach agreement. Alternatively, Engineer can determine.
Role of the Employer and its agents	Refers to Employer and the Engineer (a person who may not necessarily be an Engineer). Engineer is the Employer's agent but may be restricted by the Employer. Makes reference to Employer's Personnel. All may delegate their duties. Engineer is required to determine any matter by consultation with the parties and if agreement is not reached, to determine the matter by making a fair determination in accordance with the contract, accounting for the circumstances
Subcontracting	Contractor is liable as if he/she had not subcontracted. Provision for Nominated Subcontracts. No back-to-back conditions of subcontract are provided.
Claims procedures	If Contractor considers him/herself entitled to make any claim for extension of time or additional payment, he/she shall notify the Engineer within 28 days of the circumstances giving rise to the claim, after which the Employer has no further liability. This is a strict / full time bar.
Dispute management	Disputes first referred to a Dispute Adjudication Board (single person or threeperson board) for settlement. If no notice of dissatisfaction is received it becomes final and binding. General Conditions of Dispute Adjudication Agreement included as an Appendix in each main contract document. If dissatisfied, a party notifies the other and amicable settlement is attempted. If still no agreement, proceed to international arbitration by three arbitrators under ICC rules, unless otherwise agreed by the parties

12.9 Appendix 9 – FIDIC key features and layout

The FIDIC Red Book 2017 has the following intentions when considering the contract strategy and design:

"*...recommended for building or Engineering works designed by the Employer or by its representative, the Engineer. Under the usual arrangements for this type of contract, the Contractor constructs the works in accordance with a design provided by the Employer. However, the works may include some elements of Contractor-designed civil, mechanical, electrical and/or construction works.*" (International Federation of Consulting Engineers (FIDIC), 2017)

The FIDIC Red Book (and others in the rainbow suite of contracts) is divided into three distinct sections:

i. General Conditions, the part which is intended to be incorporated (by reference) into each contract;
ii. Guidance for the Preparation of the Particular Conditions, which commences by proposing suitable wording to incorporate the appropriate General Conditions into a contract, and which concludes with annexed example forms of securities;
iii. Forms of Letter of Tender, Contract Agreement and Dispute Adjudication Agreement, the part which is referred to in this Guide as "the Example Form(s)" (International Federation of Consulting Engineers (FIDIC), 2017), (Jaeger & HoK, 2010).

The FIDIC Red Book comprises 20 main clauses (in reality 'chapters' covering major topics by numerous sub-clauses (Glover & Hughes, 2011)), listed as follows:

1. General provisions;
2. The Employer;
3. The Engineer;
4. The Contractor;
5. Nominated subcontractors;
6. Staff and labour;
7. Plant, materials and workmanship;
8. Commencement, delays and suspension;
9. Tests on completion;
10. Employer's taking over;
11. Defects liability;

12. Measurement and valuation;
13. Variations and adjustments;
14. Contract price and payment;
15. Termination by Employer;
16. Suspension and termination by Contractor;
17. Risk and responsibility;
18. Insurance;
19. Force majeure;
20. Claims, dispute and arbitration.

Like the NEC ECC and contrary to the JBCC PBA, FIDIC empowers Employers with many different contracting strategies, however these are in the different contracts in the rainbow suite, opposed to one contract with many options, as is the case with the NEC ECC.

12.10 Appendix 10 – FIDIC 2017 Red Book critical analysis

The below referenced is the critical analysis of the FIDIC 2017 Red Book for all mandatory obligations outside of the 'main obligations' as referenced by Segal (2018) and covered under 6.2.

12.10.1 Risks due to the obligations of the Employer

12.10.1.1 Issue electronic original notice, NOD or certificate to the Contractor and copy the Engineer (Sub-Clause 1.3)

The following terms are applicable in the above sub-clause (complete with definitions from the contract):

Notice: "*Means a written communication identified as a Notice and issued in accordance with Sub-Clause 1.3*"

Notice of Dissatisfaction or 'NOD': "*means the Notice on Party may give to the other Party if it is dissatisfied, either with the Engineer's determination under Sub-Clause 3.7…or with a DAAB's decision under Sub-Clause 21.4…*"

According to Glover & Hughes (2018) sub-clause 1.3 makes distinction between notices and other types of communication and such communications is deemed to have been received the day after transmission, with the contract making it clear that such communication will only take effect when is deemed to have been received.

If the Employer fails to issue a notice or communication, the Contractor nor the Engineer would have taken receipt of it resulting in no change in the status quo.

12.10.1.2 Employer gives notice to the Engineer if it finds an ambiguity or discrepancy in the document (Sub-Clause 1.5)

In terms of this obligation the Employer notifies the Engineer in the event that it finds an ambiguity or a discrepancy in the document, where according to Glover & Hughes (2018) the priority of documents has remained the same as the 1999 Red Book, which priority is listed as follows:

"*(a) the Contract Agreement;*
(b) the Letter of Acceptance;
(c) the Letter of Tender;
(d) the Particular Conditions Part A – Contract Data;
(e) the Particular Conditions Part B – Special Provisions;

(f) these General Conditions;

(g) the Specification;

(h) the Schedules;

(i) the Contractor's Proposal;

(j) the JV Undertaking (if the Contractor is a JV); and

(k) any other documents forming part of the Contract."

If the Employer does not issue the required notice to the Engineer, the Engineer will not action such ambiguity or discrepancy, as the same would not have been brought to its attention.

12.10.1.3 Sign a contract agreement within 35 days after the Contractor receives letter of acceptance (Sub-Clause 1.6)

In this obligation the parties are required to sign a contract agreement within 35 days after the Contractor receives the letter of acceptance from the Employer. In accordance with the guidance notes that accompany the General Conditions, the authors suggest that the tender include for the sample contract agreement, a "sample form" of which is provided as part of the publication.

The following terms are applicable in the above sub-clause (complete with definitions from the contract):

Contract Agreement: "*means the agreement entered into by both Parties in accordance with Sub-Clause 1.6…*"

Letter of Acceptance: "*means the letter of formal acceptance, signed by the Employer, of the Letter of Tender, including any annexed memoranda comprising agreements between and signed by both Parties. If there is no such letter of acceptance, the expression "Letter of Acceptance" means the Contract Agreement and the date of issuing or receiving the Letter of Acceptance means the date of signing the Contract Agreement*"

If the Employer fails to sign the contract agreement, it shall be in material breach of the contract in terms of sub-clause 16.2.1 (g) (i): "*fails to comply with Sub-Clause 1.6…*", the result of which is that the Contractor has the right to give notice of its intention to terminate.

12.10.1.4 Treat confidential information as confidential (Sub-Clause 1.12)

According to Glover & Hughes (2018) the confidentiality requirements in the general conditions are not one-sided and requires the Employer to keep information marked as

'confidential' as confidential, where the Employer is prohibited from disclosing such information to third parties, except in a situation where the Employer exercises its rights in terms of sub-clause 15.2 [Termination for Contractor's Default]. The Employer's obligation to such confidentiality does not apply to information:

"*(i) already in the party's possession that was not required to be kept confidential prior to receipt;*

(ii) generally available to the public through no breach of the Conditions; or

(iii) lawfully obtained from a third party which is not bound by any obligation of confidentiality." (Glover & Hughes, 2018)

There is no specific result in the general conditions for the Employer's failure to perform the obligation to treat information provided by the Contractor and marked as 'confidential' as confidential.

12.10.1.5 Comply with all applicable laws (Sub-Clause 1.13)

The obligation in terms of this sub-clause is simply in that the Employer is obliged to comply with all applicable laws.

12.10.1.6 Obtain the planning, zoning or building permit, permissions, licences and or approvals for the permanent works (Sub-Clause 1.13)

According to Glover & Hughes (2018) the 2017 edition of the Red Book is more prescriptive in what the Employer and the Contractor's obligations are in terms of the planning, zoning and permissions for the execution of the works.

In accordance with the sub-clause 1.13 the Employer is obliged to obtain planning and other permissions for the permanent works, which includes "*planning, zoning or building permit, permissions, licences and or approvals for the permanent works*".

If the Employer fails to provide the required planning, zoning or building, permissions, licences and or approvals for the permanent works the Contractor is under no obligation to perform such work, as such an act by the Contractor would be unlawful.

12.10.1.7 Provide the Contractor with assistance to obtain copies of laws and permits required (Sub-Clause 2.2)

In the event that the Contractor requests the Employer for its assistance, the Employer is obliged in terms of the general conditions to provide the Contractor with assistance to obtain copies of the laws of the country which are not readily available and according to

Glover & Hughes (2018) any permits, permissions, licences or approvals required by the law of the country. The Employer is fully within its rights to claim back cost incurred by way of its aiding the Contractor in terms of sub-clause 2.2 [Assistance].

Although according to Glover & Hughes (2018) the general conditions do not contain an express remedy for the Contractor if the Employer fails to provide its required assistance, the Contractor may claim for extension of time under sub-clause 8.5(e), where under that sub-clause the Contractor has entitlement to extension of time where completion has been delayed due to "*any delay, impediment or prevention caused by or attributable to the Employer*". Note though that this excludes for the Contractor to recover any cost incurred.

12.10.1.8 Responsible for its personnel and other Contractors co-operate with the Contractor and comply with the Contractor's health and safety obligations (Sub-Clause 2.3)

There are two distinct obligations for the Employer under this sub-clause, the first being its obligation for its personnel and its other Contractors (if any) to co-operate with the Contractor's efforts under sub-clause 4.6 [Co-operation] where the Contractor is required to co-operate with the Employer and its other Contractors. Secondly, Glover & Hughes (2018) asserts that the Employer is obliged to comply with the same health and safety requirements set out for the Contractor in (a) – (e) of sub-clause 4.8 [Health and Safety Obligations].

The Contractor may rely on sub-clause 20.1 (c) to claim against the Employer, its personnel or its other Contractor for failure to comply to co-operate and comply with the Contractor's health and safety obligations.

12.10.1.9 Finance the contract in terms of the requirements in the Contract Data (Sub-Clause 2.4)

In terms of the general conditions the Employer is required to provide in the Contract Data the necessary detailed information of its financing arrangements to fulfil its obligations. This information is provided at tender stage already, which would necessarily provide the Contractor with the necessary information to determine whether the Employer does in fact have the financial means at its disposal to pay for its obligations.

According to Glover & Hughes (2018) the Employer is further obliged to notify the Contractor if there is a material change in its financial position, or in its ability pay the part of the contract price that remains. Should the Contractor request the Employer to provide evidence that financial arrangements have been made and are being maintained to

allow the Employer to pay the part of the contract price remaining, the Employer will provide such information within 28 days of receiving the request from the Contract.

The Contractor has the right to suspend in terms of sub-clause 16.1 (b): "*the Employer fails to provide reasonable evidence in accordance with Sub-Clause 2.4…*" and if the failure is not corrected within the period stated the Contractor has the right to terminate in terms of sub-clause 16.2.1 (a): "*the Contractor does not receive the reasonable evidence within 42 days after giving Notice under Sub-Clause 16.1…in respect of failure to comply with Sub-Clause 2.4…*".

12.10.1.10 Notify the Contractor if its financial situation changes (Sub-Clause 2.4)

Refer to 12.10.1.9

12.10.1.11 Provide evidence of financial arrangements having been made to meet financial obligations (Sub-Clause 2.4)

Refer to 12.10.1.9

12.10.1.12 Make available site information including topography of the site and environmental conditions on the site (Sub-Clause 2.5)

The Base Date is defined as follows in the general conditions: "*means the date 28 days before the latest date for submission of the Tender*".

In terms of clause 2.5 and confirmed by Glover & Hughes (2018) the Employer is obliged (before the base date) to make available to the tenderers the relevant data in its possession of the topography of the site and on sub-surface, hydrological, climatic and environmental conditions at the Site. The obligation extends to the Employer to promptly make available such information that may come to its possession after the base date. Although the Employer is not obliged to provide the above required information, Glover & Hughes (2018) contend that it is required to act in good faith in making available the necessary information, as the tenderer's price is based on its interpretation of information made available in terms of sub-clause 4.10: "*Use of Site Data*".

Owing to the fact that the Contractor's tender price is based on the information required in terms of clause 2.5 [Site Data and Items of Reference], the Employer is best advised to make available all relevant data, as the Contractor may claim for extension of time in terms of sub-clause 8.5 [Extension of Time for Completion] based on the data provided as well as give notice to the Engineer of errors on the data provided in terms of sub-clause

4.7.2 [Errors], with the result (from the remedies contained in sub-clause 4.7.3 [Agreement or Determination of rectification measures, delay and/or Cost] and referenced sub-clause 20.2 [Claims for Payment and/or EOT]) being that the Contractor may claim for extension of time with cost.

12.10.1.13 Notify the Engineer of a typographical or clerical or arithmetical error in a determination (Sub-Clause 3.7.4)

While sub-clause 3.7 [Agreement or Determination] largely deals with the Engineer's obligation to determine claims, the Employer has only one obligation under this sub-clause which is to give notice to the Engineer of a typographical or clerical or arithmetical error made in its determination. Such notice by the Employer is required to be issued to the Engineer within 14 days of receiving the Engineer's notice of agreement or determination.

Failure by the Employer to provide such notice (at all, or within the required 14 days from receiving the notice of agreement or determination) has the effect that the agreement or determination stands, regardless of whether it has a typographical or clerical or arithmetical error.

12.10.1.14 Consent to entity providing performance security (Sub-Clause 4.2)

Sub-clause 4.2 [Performance Security] largely includes for the Contractor's obligations in providing the performance security, which is defined as: "*means the security under Sub-Clause 4.2…*"

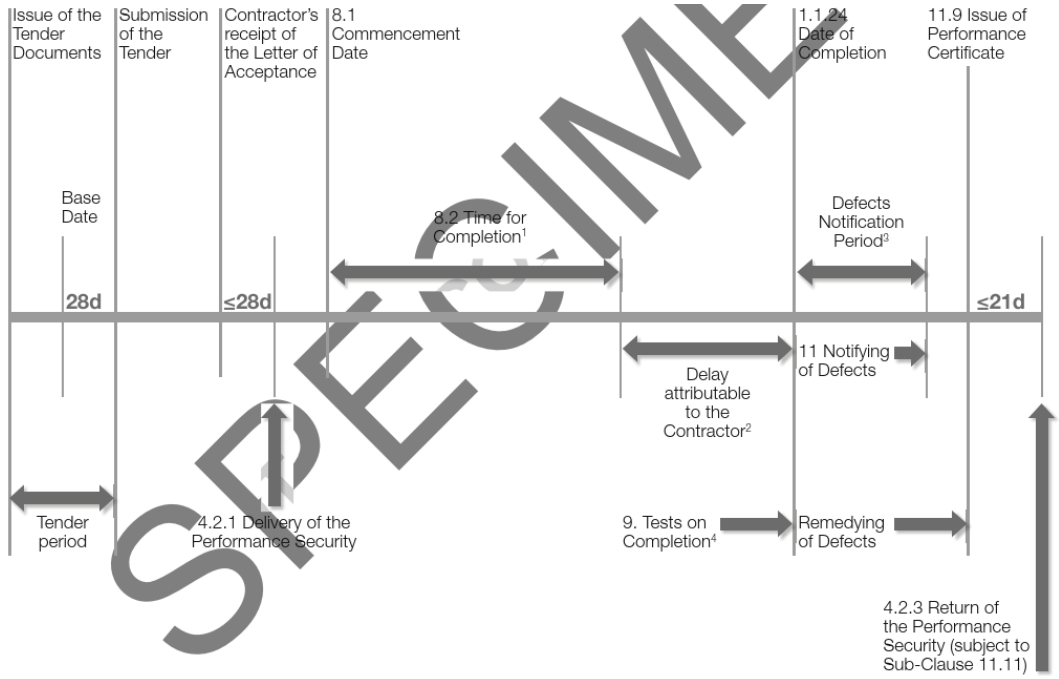
However the Employer has the obligation to give its consent to the entity issuing the performance security and from the country the security is issued, with Glover & Hughes (2018) highlighting that such performance security being required to be in the form the Employer approves. A sample performance security is provided in the contract annex and is available to the tenderers to take into consideration. Further the Employer is required to ensure that it receives a performance security that is compliant with the applicable law.

Failure by the Employer to provide such consent will result in the Contractor not being paid in terms of the contract, which (if the Employer fails to reasonably provide such consent) means the Contractor may not have right of access to the site by the date required, which in terms of sub-clause 2.1 [Assistance] gives the Contractor the right to claim for extension of time and cost plus profit in terms of clause 20.2 [Claims For Payment and/or EOT].

12.10.1.15 Return the performance security to the Contractor (Sub-Clause 4.2.3)

In terms of this sub-clause 4.2.3 the Employer is obliged to either return the performance security with 21 days of the performance certificate being issued and the clearance of the site by the Contractor (in terms of sub-clause 11.11 [Clearance of Site]) or promptly after the date of termination.

Figure 47 illustrates the return of the performance security after the issue of the performance certificate (which according to sub-clause 11.9 [Performance Certificate] means that the Contractor's obligation in terms of the contract is considered to be completed and that the works is accepted).



SPECIMEN

Figure 47 - Typical Sequence of Principal Events During Contracts for Construction (International Federation of Consulting Engineers (FIDIC), 2017)

Although the return of the performance security to the Contractor is an express obligation of the Employer, the general conditions is silent as to what the remedy is to the Contractor if the Employer fails to fulfil such obligation.

12.10.1.16 Shall not recruit the Contractor's personnel (Sub-Clause 6.3)

According to Glover & Hughes (2018) neither the Contractor, nor the Employer has any right to recruit each other's personnel in terms of this sub-clause 6.3 [Recruitment of Persons]. They do however have misgivings about the weight of the clause and argue that

it may be difficult for the Contractor to prove and quantify damage for a breach of this obligation.

12.10.1.17 Examine, inspect, measure and test the materials, plant and workmanship (Sub-Clause 7.3 a)

According to Glover & Hughes (2018) the Employer is "*entitled to inspect the entire site and anywhere where work is being carried out, even off-site.*" They add that this is a wide-ranging clause that requires the Employer to give reasonable notice before such examination, inspection and so forth. Accordingly, the purpose of the clause is really to prevent defects before they occur in the works.

There is no express obligation for the Employer to give the Contractor any prior notice in terms of the contract for such examination or any related inspection.

A failure by the Employer to undertake such examination, inspection, measure and materials test, and so forth may result in defects occurring which would otherwise have been stopped before they occur.

12.10.1.18 Check progress of manufacture of plant and manufacture of materials (Sub-Clause 7.3.b)

Refer to 12.10.1.17

12.10.1.19 Make records (Sub-Clause 7.3 c)

Refer to 12.10.1.17

12.10.1.20 Carry out inspection, measuring and testing on request from the Contractor (Sub-Clause 7.3 c)

Refer to 12.10.1.17

12.10.1.21 Rely on the Contractor's programme when planning activities (Sub-Clause 8.3)

In terms of sub-clause 8.3 the Employer enjoys the right to rely on the Contractor's programme when planning its activities, with Glover & Hughes (2018) highlighting that the Contractor is required to revise its programme whenever it is "*inconsistent with actual progress*". The reasoning for such a right on the Employer is that sub-clause 2.1 [Right of Access to the Site] does not grant exclusive access to the site to the Contractor and that

the Employer and the Engineer may very well rely on the Contractor's programme to plan other parties' activities that may be necessary on the site.

There is no remedy for the Employer failing to rely on the Contractor's programme in the general conditions, however the Employer is well advised to rely on such information, especially when other Contractors are appointed for different works on the site.

12.10.1.22 Give advance warning to the Contractor and the Engineer of listed events and circumstances (Sub-Clause 8.4)

This new sub-clause to the 2017 edition of the general conditions is similar in the principals laid down in the NEC3 and NEC4 ECC with regard to the early warning register and meetings (per NEC4 ECC core clause 15.1), with the difference being that the NEC4 ECC does not have any provision for the Employer to take part in the process.

In terms of this sub-clause 8.4 [Advance Warning] the Employer is obliged to give advance warning to the Contractor and the Engineer of any known or possible future events which may:

"*(a) adversely affect the work of the Contractor's Personnel;*

(b) adversely affect the performance of the Works when completed;

(c) increase the Contract Price; or

(d) delay the execution of the Works or a Section (if any)."

According to Glover & Hughes (2018) this new addition to the general conditions is consistent with the avoidance of disputes, with the basic idea of the clause being that an advance warning of adverse events to the contract may result in lower chances of disputes between the parties. The sub-clause does however not require formal notices in terms of the contract, with the premise being that this process drives open communication and does not serve as notices to claim.

An aspect of the clause which must be considered is that the Employer is obliged to give advance warning, failing which the Contractor may claim that as a result of the Employer's breach of its obligation the Contractor has suffered. The contract is unfortunately silent on the matter, but this remains open for further research.

12.10.1.23 Take over the works (Sub-Clause 10.1)

According to Glover & Hughes (2018) the Employer takes over the works when:

"*(i) the Works and the conditions described in sub-paras (b)-(d) have been completed; and*

(ii) a Taking-Over certificate has been issued or deemed to have been issued."

The result of such take over is that the Employer takes complete possession of the works, that it can start operating the end product and (if applicable) earn an income from it. By extension, the responsibility of the works also passes to the Employer, as such it will be well advised to take over the works in terms of the contract, as a failure in this regard would be at the Employer's own peril.

12.10.1.24 Jointly with the Contractor inspect a defect or damage (Sub-Clause 11.1)

Under sub-clause 11.1 [Completion of Outstanding Work and Remedying Defects] most of the obligations are for the Contractor, however in saying that the Employer (not the Engineer) is obliged to jointly with the Contractor inspect a defect or damage during the DNP (defects notification period) subsequent to the Employer having notified the Contractor of such defect or damage. Note however that the Employer may give the Engineer the necessary instruction to act on its behalf in giving such notice to the Contractor.

The DNP is defined as follows in the general conditions: "*means the period for notifying defects and/or damage in the Works or Section of a Part…under Sub-Clause 11.1…, as stated in the Contract Data (if not stated, one year), and as may be extended under Sub-Clause 11.3… This period is calculated from the Date of Completion of the Works or Section or Part.*"

Of interest is that FIDIC does not define the term 'defect', while the NEC4 ECC does. However the defects are referred to in sub-clause 7.5 which according to Glover & Hughes (2018) says "*that the Engineer must give Notice to the Contractor of any Materials, design or workmanship that has been found to be defective or otherwise not in accordance with the Contract.*"

According to Glover & Hughes (2018) the defects must be notified during the DNP; however the Contractor may require a period beyond the end of the DNP to complete the rectification of such defect.

Failure by the Employer to give the Contractor the proper notice to inspect such defect will result in the Employer losing its right in terms of this sub-clause. Glover & Hughes (2018) warns that if the Employer were to fail to notify the Contractor and make

corrections on its own expense, it will not have the right to recover such cost incurred from the Contractor.

12.10.1.25 Fix a date for the remedy of a defect (Sub-Clause 11.4)

The obligation in terms of this sub-clause 11.4 [Failure to Remedy Defects] only exists once the Contractor has unduly delayed the remedying of any defect or damage; in such an event the Employer (or its duly authorised Engineer) shall give notice of the date such defect or damage is required to be remedied, on the condition that such date shall allow the Contractor reasonable time to remedy such defect or damage at its own cost.

According to Glover & Hughes (2018) if the Employer fails to give the required notice in terms of sub-clause 11.4 the Employer may not later be able rely on the provisions of this sub-clause 11.4.

12.10.1.26 Respond to Contractor's notice to have access to the works during defects notification period (Sub-Clause 11.7)

Within the first 28 days after the issue of the performance certificate the Contractor enjoys the right of access to all parts of the works. However, following this period, the Contractor is obliged to give notice to the Employer of its request to access to the works and/or records, which notice includes for the reason the access is required as well as the date such access is required.

12.10.1.27 Notify the Contractor of its intention to terminate the contract (Sub-Clause 15.2.1)

Glover & Hughes (2018) indicate that Clause 15 [Termination by the Employer] sets out the circumstances under which the Employer has the right to terminate; those being limited to the Contractor's default (under sub-clause 15.2 [Termination for Contractor's Default]) and for the Employer's convenience (under sub-clause 15.5 [Termination for Employer's Convenience]). Additionally, the contract may be terminated under sub-clauses 9.4(b) (failure to pass tests on completion), 11.4(d) (failure to remedy defects), 18.5 [Optional Termination] and 18.6 [Release from Performance under the Law].

The reasons contained in sub-clause 15.2 [Termination for Contractor's Default] for the Employer to enjoy the right give notice to the Contractor for its intention to terminate the contract are the following:

"*(a) fails to comply with:*

(i) a Notice to Correct;

(ii) a binding agreement, or final and binding determination, under Sub-Cl 3.7; or

(iii) a decision of the DAAB under Sub-Cl 21.4

and such failure constitutes a material breach of the Contractor's obligations:

(b) abandons or refuses to continue the Works;

(c) without reasonable excuse fails to proceed with the Works in accordance with Cl1.8 or its failure to comply with Sub-Cl 8.2 has resulted in the Employer being entitled to Delay Damages that exceed the maximum amount specified in the Contract Data, if an amount is specified;

(d) fails to comply, without reasonable excuse, with:

(i) a Notice of rejection given by the Engineer under Sub-Cl. 7.5; and

(ii) an Engineer's instruction under Sub-Cl. 7.6

Within 28 days after receiving it; or

(e) fails to comply with Sub-Cl 4.2, i.e. fails to provide and/or maintain the Performance Security." (Glover & Hughes, 2018)

A further point that the Employer has to determine (prior to giving notice to terminate) is whether the breach was in fact a material breach or not, with the same being defined as "*for the breach to be material, it must have had a serious effect on the benefit which the Lessor would otherwise have had from the transaction, that is, it must be of a serious or substantial import*" in the case of *Elders Ltd v EJ Knight Co Pty Ltd (2009) NSWSC 1462*.

The Employer is obliged to give notice to the Contractor of its intention to terminate the contract, with Glover & Hughes (2018) going to lengths to highlight the importance of such notice in termination proceedings, especially with regards to the delivery of the notice (they cite the following cases as examples on the importance of the notice and the fact that it has to be perfectly correct: *Central Provident Fund Board v Ho Bock Kee (1981) 17 B.L.R. 21* (in Hong Kong) and *Obrascon Huarte Lain SA v Her Majesty's Attorney General for Gibraltar [2014] EWHC 1028 (TCC)*), as well as the timelines involved and the obligation on the Employer for its duly authorised signatory to sign such notice. To this end the Employer is well advised to ensure compliance with the definition of a notice under the contract, being: "*means a written communication identified as a*

Notice and issued in accordance with Sub-Clause 1.3 [Notices and Other Communications]." (International Federation of Consulting Engineers (FIDIC), 2017). Any failure on these grounds may result in the Employer losing its right to terminate the contract.

12.10.1.28 Notify the Contractor of the release of its equipment or temporary works (Sub-Clause 15.2.4)

If the Employer has terminated the contract it has the right to "*complete the Works and/or arrange for any other entities to do so*" under sub-clause 15.2.4, for which completion the Employer also has the right to the Contractor's goods and Contractor's documents. The above 'goods' is defined in sub-clause 1.1.44 as: "*…Contractor's Equipment, Materials, Plant and Temporary Works, or any of them as appropriate.* "; whereas 'Contractor's documents' is defined in sub-clause 1.1.15 as: "*…the documents prepared by the Contractor as defined in Sub-Clause 4.4…including calculations, digital files, computer programs and other software, drawings, manuals, models, specifications and other documents of a technical nature.*"

After termination the Employer may complete the works itself, or employ others to complete the work on its behalf, with Glover & Hughes (2018) confirming that the Employer has the right to the Contractor's goods and Contractor's equipment to effect such completion. Subject to the Contractor not owing the Employer any money, such goods must be returned to the Contractor following the Employer's use of them, with the Contractor being liable for the cost of collection; if the Contractor owes the Employer money the Employer enjoys the right to sell such goods to recover the moneys owed to it with any balance from such proceeds being paid to the Contractor.

The general conditions do not make any specific reference as to what rights the Contractor enjoys if the Employer does not give such notice as required in terms of sub-clause 15.2.4. It is likely that the Contractor may want to have such Contractor's equipment and temporary works to be released and may demand the same from the Employer if the Employer does not give the required notice, at which time the Employer is obliged to the further obligations as stated above.

12.10.1.29 Notify the Contractor of its intention to terminate the contract for convenience (Sub-Clause 15.5)

According to Glover & Hughes (2018) the reference to the Employer's default is added to likely cover the Employer for a lack on its part to finance the project, as there is no

default required by the Contractor to put such termination proceedings into place. This certainly puts into perspective the lack of a good faith provision under certain jurisdictions.

Refer to 12.10.1.27 with regards to the notice required. Under this sub-clause 15.5 [Termination for Employer's Convenience] the Employer enjoys the right to give notice to the Contractor of its intention to terminate the contract, which termination takes effect 28 days after the Contractor receives the notice, or after the return of the performance certificate; whichever is the later.

Although these are not part of the Employer's obligation in itself, it is of interest and likely to be fair that the Employer does not enjoy the same rights under the termination for its own convenience, as opposed to the rights it enjoys under sub-clause 15.2 [Termination for Contractor's Default] for termination due to the Contractor's default. Glover & Hughes (2018) confirms this and indicates that the Employer does not enjoy the right to the Contractor's documents (save for those paid for), nor to the continued use of the Contractor's equipment, temporary works, access arrangements and/or of the Contractor's facilities, or services.

Failure by the Employer to provide such notice has the effect that the Employer does not put into motion the proceedings to terminate the contract.

In turn, the Employer is obliged to give the Contractor notice within 7 days of receiving such notice informing the Contractor of either the Employer's consent to such access or alternatively proposing a reasonable alternative date. This sub-clause 11.7 [Right of Access after Taking Over] is clear that the Employer loses its right to alternative dates in the event that it does not respond to the Contractors notice within the period stated: "*If the Employer fails to give this Notice within the 7 days, the Employer is deemed to have given consent to the Contractor's access on the preferred date stated in the Contractor's Notice.*"

12.10.1.30 Take responsibility for the care of the works on issuance of taking-over certificate (Sub-Clause 17.1)

In order to understand the passing of responsibility from the Contractor to the Employer it is necessary to have a look at what the definitions are for 'Date of Completion and 'Taking-Over Certificate'.

Under sub-clause 1.1.24 Date of Completion is defined as: "…*the date stated in the Taking-Over Certificate issued by the Engineer; or, if the last paragraph of Sub-Clause*

10.1 [Taking Over the Works and Sections] applies, the date on which the Works or Section of the Works are deemed to have been completed in accordance with the Contract; or, if Sub-Clause 10.2 [Taking Over Parts] or Sub-Clause 10.3 [Interference with Tests on Completion] applies, the date on which the Works or Section or Part are deemed to have been taken over by the Employer"

Under sub-clause 1.1.79 Taking-Over Certificate is defined as: "…*a certificate issued (or deemed to be issued by the Engineer in accordance with Clause 10 [Employer's Taking Over]*."

Glover & Hughes (2018) highlights that the responsibility of the works passes to the Employer once the taking-over certificate has been issued, or in the event of termination at the date of termination. There is however the condition that the Contractor has the obligation to take care of any outstanding work at the time of completion.

Owing to the wide nature of events that could determine the date of commencement of the care of the works, the Employer is best advised to have its affairs in order to arrange for the required insurances at the date for completion or when the taking-over certificate is issued (or deemed to have been issued by the Engineer).

Failure by the Employer to ensure that it takes responsibility for the works at the time required under this sub-clause 17.1 [Responsibility for Care of the Works] could result in the Employer suffering losses if the necessary insurances were not put in place; as the Contractor is no longer under any obligation to take care of or responsible for the works from such date (subject of course to the provisions contained for the Contractor causing damage or loss after the taking-over certificate under sub-clause 17.2 [Liability for Care of the Works]).

12.10.1.31 Notify the Contractor of an exceptional event if it is prevented from performing any obligations under the contract due to an exceptional event (Sub-Clause 18.2)

'Exceptional event' means under sub-clause 18.1 an event of circumstance which:

"*(i) is beyond a Party's control;*

(ii) the Party could not reasonably have provided against before entering into the Contract;

(iii) having arisen, such Party could not reasonably have avoided or overcome; and

(iv) is not substantially attributable to the other Party."

Furthermore, the term ‘exceptional events’ includes for those events listed in (a) to (f) of sub-clause 18.2 [Notice of an Exceptional Event], which list according to Glover & Hughes (2018) is not exhaustive and is a list of examples only. They go on to highlight that the reference in the clause from ‘force majeure’ to ‘exceptional event’ (from the 1999 to the 2017 issue of the Red Book) has been largely counterproductive and that the clause has in its essence remained a ‘force majeure’ clause. The nature, cause and result of ‘exceptional events’ are beyond the ambit of this report; however, the authors highlight that what constitutes such events will depend on the circumstances and that the notice required under sub-clause 18.2 [Notice of an Exceptional Event] by the party affected by such event is of particular importance.

The notice required for an exceptional event is required to be issued by the party affected within 14 days of becoming aware, or ought to become aware of such event preventing the party of performing its obligations under the contract; which notice shall include for the obligations affected (as a result of the exceptional event) and which performance will be prevented. Failing such notice within 14 days the party (in this case the Employer) will only be excused from the listed obligations and the performance affected from the date the notice is received by the Contractor. The Employer shall be excused from such obligations for as long as the event prevents the Employer from performing the listed obligations, with the condition that the Employer shall not be excused from the obligation to pay the Contractor as a result of an exceptional event. The Employer is well advised, as with any other notice to comply with the requirements for a notice under sub-clause 1.3 [Notices and Other Communications].

12.10.1.32 Use all reasonable endeavours to minimise any delay in the performance of the contract as a result of the exceptional event (Sub-Clause 18.3)

There is an obligation on the Employer use all reasonable endeavours to minimise the delay caused by an exceptional event, with the second obligation under sub-clause 18.3 [Duty to Minimise Delay] being that the Employer is required to notify the Contractor when it ceases to be affected by the exceptional event. Failing such notice by the Employer, the Contractor may give notice to the Employer that it considers the Employer to no longer be affected by the exceptional event.

Glover & Hughes (2018) indicate that although the terms do not expressly state so, there is an indication that the general conditions attempts to ensure that the parties work together to minimise the delay occasioned by the exceptional event. As such, if the

Employer does not prove by its actions to use all reasonable endeavours to minimise any delay in the performance of the contract as a result of an exceptional event, the Contractor may in fact have a claim against the Employer. In the recent case of the *Joint Venture Between Aveng (Africa) Pty Ltd and Strabag International GmbH v South African National Roads Agency SOC Ltd and Another (8331/19) [2019] ZAGPPHC 97; [2019] 3 All SA 186 (GP) (22 March 2019)*, judge Makhuvele ruled that the contract obliges the parties "*make efforts to resolve the problems*", further highlighting that it is not enough to simply rely on the provisions of the contact, but for the parties to work together to resolve problems which "*could reasonably have been anticipated and planned for*".

12.10.1.33 Consent to insurance provided by the Contractor (Sub-Clause 19.1)

Glover & Hughes (2018) indicate that in the main the Contractor is the party responsible for arranging and taking out insurance cover, which cover is summarised in sub-clause 19.2 [Insurance to be provided by the Contractor] as: works insurance (19.2.1), goods insurance (19.2.2), liability for breach for professional duty (19.2.3), injury to persons and damage to property (19.2.4), injury to employees (19.2.5), other insurances required by laws and local practice (19.2.6 and as so listed in the Contract Data).

In terms of sub-clause 19.1 [General Requirements] the Employer is obliged to consent to the terms of the insurance proposed (for all the insurance which the Contractor is responsible for) as well as the for the underwriter of the insurance. Such terms are to be agreed with the Contractor prior to the letter of acceptance, with Glover & Hughes (2018) indicating that an alternative approach should be agreed and included in the letter of acceptance if the terms of the insurance cannot be agreed.

It is noted that the sub-clause does not indicate that the Employer is obliged to approve the terms or the insurer, but rather consent to the insurer providing the insurance. Accordingly, it is my understanding that if the Employer fails to provide such content, the Contractor takes out such insurances on the terms agreed prior to the letter of acceptance being issued by an insurer which the Employer did not formally consent to, the risk of the insurer in such case being for the Employer.

12.10.1.34 Bear the loss suffered in the event in the event where there is shared liability and a breach has occasioned non-recovery by the Contractor (Sub-Clause 19.1)

Should the parties have agreed to a shared liability scheme the limits to the liability is required to be agreed beforehand, the result of which is that each party bears the same

proportion of loss to the proportion of liability. This is on condition that the loss is not suffered as a direct result of the defaulting party's breach of sub-clause 19.1 [General Requirements]; if such a breach was in fact occasioned the party responsible for such loss shall also bear such loss.

The Contractor may have the right to lodge a dispute if the Employer does not bear such loss, however the Employer can really but only bear such loss, as there is no option of failing this liability.

12.10.1.35 Notify the Engineer of a claim against the Contractor (Sub-Clause 20.2.1)

Under sub-clause 20.1 [Claims] a claim may arise:

"*(a) if the Employer considers that the Employer is entitled to any additional payment from the Contractor (or reduction in the Contract Price) and/or to an extension of DNP;*

(b) if the Contractor that the Contractor is entitled to any additional payments from the Employer and/or EOT; or

(c) if either Party considers that he/she/she is entitled to another entitlement or relief against the other Party. Such other entitlement or relief may be of any kind whatsoever (including in connection with any certificate, determination, instruction, Notice, opinion or valuation of the Engineer) except to the extent that it involves any entitlement referred to in sub-paragraphs (a) and/or (b) above."

As a result of the above it is evident that both parties enjoy the right to submit claims to the Engineer to determine under sub-clause 3.7 [Agreement or Determination] for the reasons stated in sub-clause 20.1 [Claims].

According to Glover & Hughes (2018) the notice (by the Employer) under sub-clause 20.2.1 is only applicable on (a) of sub-clause 20.1. They continue to indicate that the following process applies when the Employer intends to submit a claim against the Contractor:

<u>Step 1: Submit the notice of claim to the Engineer (under sub-clause 20.2.1)</u>

This notice is required to be submitted by the claiming party within 28 days of becoming aware or should have become aware of an event giving rise to the claim, with such notice describing the event or circumstance giving rise to the cost, delay or extension of DNP.

The Employer (or Contractor, in other words the claiming party) forfeits its right to claim should it fail to submit the notice of its intention to claim within 28 days of the event giving rise to the claim. Glover & Hughes (2018) goes to some length to indicate what the different approaches around the globe is with regard to such time bars, and indicate that the case of *Barkhuizen v Napier 2007 (5) SA 323 (CC)* is applicable under South African law and that the constitutional court ruled to the effect that the claiming party would (in the case of FIDIC) have to prove that the 28 day time bar is "*manifestly unreasonable*" in order for such time bar no to apply.

Step 2: Engineer's initial response (under sub-clause 20.2.2)

The Engineer is obliged to give notice within 14 days of receiving the notice of claim to the Employer (claiming party) that it has in fact received such notice, but that the required notice under sub-clause 20.2.1 was not received within 28 days of the event as required from the claimant. Should the Engineer fail to give the Employer such notice, the notice of claim is deemed a valid notice (even though it may have been submitted late). Subsequent to such deemed validity the Contractor in turn enjoys the right to give notice to the Engineer of its disagreement, following which the Engineer shall review the same under sub-clause 20.2.5.

In the first instance, the onus is on the Employer to include details of why a late submission was justified, failing which the Employer forfeits any rights that it may have for the Engineer to consider such late submission.

It is my own opinion that it is good practice for such deeming provisions in the contract, as this keeps the parties to the contract as well as the Engineer on their toes regarding proactive contract management, as a lack of such careful management assigns rights to parties. As a side note it has been my own experience that a Principal Agent under the JBCC PBA asked me (as the QS on the project) why he/she had to sign the Contract Data, as he/she was of the opinion that the contract was going to be left in the cupboard in any case – too boot this was on a circa R750million contract…

Step 3: Contemporary Records (under sub-clause 20.2.3)

Such contemporary records mean records which are "*prepared or generated at the same time, or immediately after, the event or circumstance giving rise to the Claim.*" These contemporary records are submitted to the Engineer to substantiate the claim (under the 1999 version of the Red Book the Employer was not obliged to keep contemporary records) for the Engineer to be able to determine the merits and/or validity with the

results to be awarded of such claim. The more detailed the contemporary records are, the more likely the Engineer can make its required fair assessment without delays to the claims process.

Failure by the Employer to keep contemporary records (to substantiate the claim submitted) may make it difficult for the Engineer to determine whether the Employer's claim is warranted and may not in such a case be able to determine in the Employer's favour (even if that was what the result of the claim ought to be).

Step 4: Fully detailed claim under (under sub-clause 20.2.4)

Under sub-clause 20.2.4 'fully detailed claims' means:

"*(a) a detailed description of the event or circumstance giving rise to the Claim;*

(b) a statement of the contractual and/or other legal basis of the Claim;

(c) all contemporary records on which the claiming Party relies; and

(d) detailed supporting particulars of the amount of additional payment claimed (or amount of reduction of the Contract Price in the case of the Employer as the claiming Party), and/or EOT claimed (in the case of the Contractor) or extension of the DNP claimed (in the case of the Employer)."

According to Glover & Hughes (2018) this requirement for the Employer to also submit a fully detailed claim is a new requirement in the 2017 version of the Red Book, as the 1999 version only placed the Contractor under the obligation to submit a fully detailed claim; this does go some length to balancing the rights and risks of the parties under this form of contract.

Such fully detailed claim is required under sub-clause 20.2.4 (i) to be submitted within either 84 days after the Employer became aware or ought to have become aware of the event or circumstance giving rise to the claim or (ii) such extended as may be proposed by the Employer and accepted by the Engineer. Failing which, the notice period shall be deemed to have lapsed and the Employer loses its right to claim for the event or circumstance giving rise to the claim in the first place. This sub-clause 20.2.4 (like 20.2.2) obliges the Engineer to respond to such failure within 14 days of the lapsing period, failing which the original notice stands and the Employer may submit the claim. The Contractor may in such a case give notice of its disagreement for the Engineer to consider. If the event or circumstance giving rise to the claim is of a continuing effect, sub-clause 20.2.6 applies.

Step 4 (b) (if applicable): Claims of continuing effect (under 20.2.6)

If the event or circumstance giving rise to the claim is of a continuing effect the first claim submitted under sub-clause 20.2.4 shall be treated as an interim claim, however the Engineer is obliged to determine under sub-clause 3.7.3 the contractual or legal basis of the first claim submitted under sub-clause 20.2.4 and respond (by way of notice to the Employer) to such claim submitted within the time limit stated in sub-clause 3.7.3.

The Employer is obliged to submit to the Engineer further interim fully detailed claims on a monthly basis giving the reduction of the contract price or the extension of the DNP.

The Employer is obliged to submit the final fully detailed claim within 28 days after the end of the effects of the event or circumstance giving rise to the claim (or within such period as may be agreed between the Employer and the Engineer); which final claim shall have the final total reduction of the contract price or the extension of the DNP.

Step 5: Agreement or determination of the claim (under sub-clause 20.2.5)

Upon receipt of a fully detailed claim under sub-clause 20.2.4 or final claim of continuing effect under sub-clause 20.2.6 the Engineer is obliged to proceed under sub-clause 3.7 [Agreement or Determination] (with Glover & Hughes (2018) indicating that the trigger for the Engineer to consider the claim is the receipt of the fully detailed claim). Under sub-clause 3.7 [Agreement of Determination] the Engineer is obliged to make a fair determination (in accordance with the contract) of the claim submitted while taking due regard for all the relevant circumstances giving rise to the claim. In accordance with sub-clause 3.7 the Engineer determines:

"*(a) The additional payment (if any) to which the claiming Party is entitled.*

(b) The reduction of the Contract Price if the claiming Party is the Employer.

(c) The extension of the Time for Completion under Sub-Cl.8.5 if the Contractor is the claiming Party.

(d) The extension of the DNP (before its expiry under Sub-Cl.11.3 if the Employer is the claiming Party." (Glover & Hughes, 2018)

Under this sub-clause 20.2.5 the Engineer is at liberty to request supporting particulars to the claim from the claimant, but is required to promptly do so by giving notice to that effect to the claimant. The Engineer is obliged under sub-clause 3.7.3 to respond to the claim within 42 days of receipt of such claim, or from the date of receipt of supporting particulars.

12.10.1.36 Notify the Engineer of a disagreement with its finding on the notice of claim (Sub-Clause 20.2.2)

For a full discussion of the claims process refer to 12.10.1.35

12.10.1.37 Include in its fully detailed claim details of disagreement or why a late submission was justified (Sub-Clause 20.2.2)

For a full discussion of the claims process refer to 12.10.1.35

12.10.1.38 Keep contemporary records to substantiate the claim (Sub-Clause 20.2.3)

For a full discussion of the claims process refer to 12.10.1.35

12.10.1.39 Submit to the Engineer a fully detailed claim (Sub-Clause 20.2.4)

For a full discussion of the claims process refer to 12.10.1.35

12.10.1.40 Submit additional particulars of claim if required by the Engineer (Sub-Clause 20.2.5 iii)

For a full discussion of the claims process refer to 12.10.1.35

12.10.1.41 Submit monthly interim fully detailed claims (for claims of a continuing basis) (Sub-Clause 20.2.6)

For a full discussion of the claims process refer to 12.10.1.35

12.10.1.42 Submit final fully detailed claim (for claims of a continuing basis) (Sub-Clause 20.2.6 c)

For a full discussion of the claims process refer to 12.10.1.35

12.10.1.43 Jointly with the Contractor appoint the member(s) of the DAAB (Sub-Clause 21.1)

Figure 48 shows the typical sequence of dispute events covered in clause 21 [Disputes and Arbitration]:

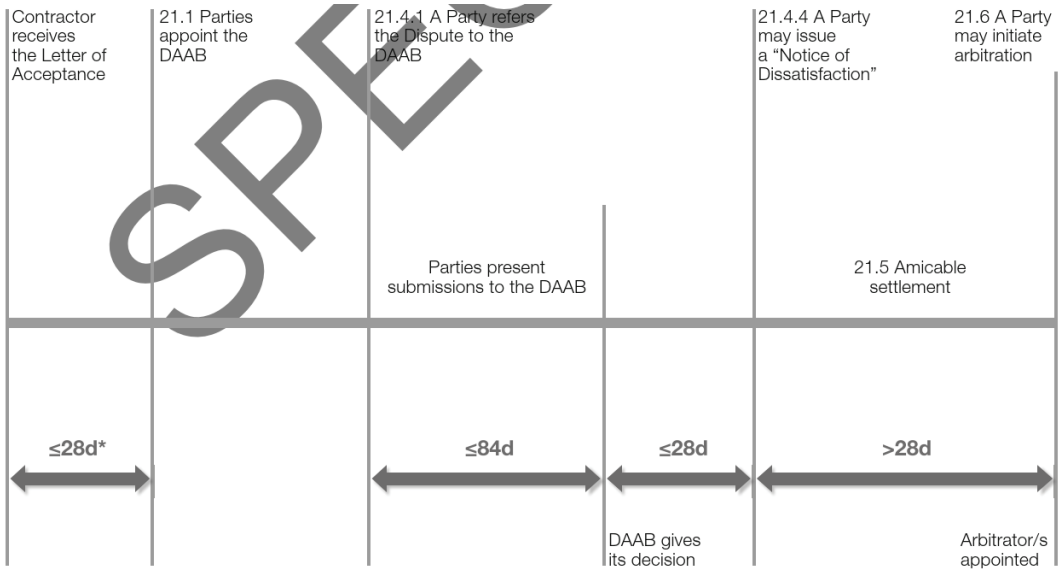


Figure 48 - FIDIC Red Book typical sequence of dispute events (International Federation of Consulting Engineers (FIDIC), 2017)

According to Glover & Hughes (2018) the 2017 'Rainbow Suite' (which the Red Book is part of) recommends the appointment of a standing DAAB, one which is thus appointed at the start of the contract and is in place for the duration of the contract.

The requirement on the parties (this is equally to the Contractor and Employer) is to jointly appoint the DAAB within 28 days (if not stated otherwise in the Contract Data) from the date the Contractor receives for the letter of acceptance. According to Glover & Hughes (2018) the guidance notes (appended to the general conditions) include for advice to the parties to appoint a standing DAAB that visits the site on a regular basis and that remains in place for the duration of the contract, the result of which would ensure consistency throughout the project as well as that disputes are always referred to the same DAAB. As such they argue that the standing DAAB would be able to immerse itself in the intricacies of the project, whereas an 'ad-hoc' DAAB would have to acquaint itself with the project every time a dispute is declared.

Appended to the general conditions is a sample form for the terms of the DAAB agreement.

Failure to appoint the DAAB would result in the rights under sub-clause 21.2: "*…then the appointing entity of official named in the Contract Data shall, at the request of either or both Parties and after due consultation with both Parties, appoint the member(s) of the DAAB…This appointment shall be final and conclusive. Thereafter, the Parties and the member(s) so appointed shall be deemed to have signed and be bound by a DAAB agreement…*". Under sub-clause 21.6 [Arbitration] the arbitrator may consider (in any

award dealing with costs of the arbitration) the extent of which (if any) "*a Party failed to cooperate with the other Party in constituting a DAAB under Sub-Clause 21.1… and/or Sub-Clause 21.2…*"

12.10.1.44 Select a member for the DAAB (Sub-Clause 21.1)

The Contract Data provides for the choice of either a single member to the DAAB or three members to the DAAB (Glover & Hughes (2018) indicate that the Employer is advised to make this decision at an early stage in the project by taking into account the size and duration of the project as well as the level of expertise required), as well as for the Employer and the Contractor to each propose the details of 3 members for consideration for the DAAB. If the Employer fails to indicate what number of members the DAAB constitutes, the default is for 3 members.

According to Glover & Hughes (2018) the requirement for both parties to provide names for the DAAB provides an equal opportunity for both and as a result neither party can feel that the members of the DAAB were forced on it. Each party chooses one member of the DAAB (from the list in the Contract Data) and obtains the other party's approval for such member. After consultation with the two DAAB party members the third member is jointly selected by the parties by agreement, this allays any fears that the third member will result in the DAAB favouring one party's interests over the other. Such third member of the DAAB shall also be the chairperson of the DAAB.

Failure to select a member for the DAAB would result in the rights under sub-clause 21.2: "*…then the appointing entity of official named in the Contract Data shall, at the request of either or both Parties and after due consultation with both Parties, appoint the member(s) of the DAAB…This appointment shall be final and conclusive. Thereafter, the Parties and the member(s) so appointed shall be deemed to have signed and be bound by a DAAB agreement…*". Under sub-clause 21.6 [Arbitration] the arbitrator may consider (in any award dealing with costs of the arbitration) the extent of which (if any) "*a Party failed to cooperate with the other Party in constituting a DAAB under Sub-Clause 21.1… and/or Sub-Clause 21.2…*"

12.10.1.45 Consult the first two members of the DAAB and agree the third member (Sub-Clause 21.1)

Refer to 12.10.1.44

12.10.1.46 Agree the remuneration of the DAAB member(s) (Sub-Clause 21.1)

In accordance with this sub-clause 21.1 [Constitution of the DAAB] the agreement of the remuneration (in equal parts and not by the unsuccessful party) of the DAAB is required to be reached prior to any dispute arising (when agreeing the terms of the DAAB agreement). According to Glover & Hughes (2018) this reinforces the approach of the DAAB to be pragmatic rather than a litigious dispute resolution process.

Failure to agree with the Contractor remuneration for the DAAB member(s) would result in the rights under sub-clause 21.2: "*…then the appointing entity of official named in the Contract Data shall, at the request of either or both Parties and after due consultation with both Parties, appoint the member(s) of the DAAB…This appointment shall be final and conclusive. Thereafter, the Parties and the member(s) so appointed shall be deemed to have signed and be bound by a DAAB agreement…*". Under sub-clause 21.6 [Arbitration] the arbitrator may consider (in any award dealing with costs of the arbitration) the extent of which (if any) "*a Party failed to cooperate with the other Party in constituting a DAAB under Sub-Clause 21.1… and/or Sub-Clause 21.2…*"

12.10.1.47 Pay one half of the DAAB member(s) remuneration (Sub-Clause 21.2)

Refer to 12.10.1.46

12.10.1.48 Be present during discussions regarding avoidance of disputes (Sub-Clause 21.3)

As part of the enhanced role of the DAAB under the 2017 version of the Red Book, Glover & Hughes (2018) indicates that the new version now includes for provisions for the parties to consult the DAAB in the avoidance of disputes, by way of requesting the DAAB to provide assistance and/or to have informal discussions and attempts to resolve any issue or any disagreement which may have come about. This change has seen the involvement of the DAAB change from giving its opinion to now being able to be actively involved in engaging with the parties in discussions to resolve such issues.

If a joint request to the DAAB for such assistance has been lodged, the Employer is obliged to be present during such discussions, unless otherwise agreed by the parties. These discussions and any advice the DAAB provide does not oblige the parties act on the same, as such if the Employer fails to attend such discussions there is no recourse for the Contractor. However, it must be said that this would not be in good faith and that the Contractor would likely in such an event get the feeling that the Employer is not

interested in resolving the issue, in which case it may refer a dispute to the DAAB under sub-clause 21.4.1.

12.10.1.49 Make available to the DAAB all information, access to site and appropriate facilities (Sub-Clause 21.4.2)

In order to put the process of the dispute in perspective, it is necessary to indicate the referral process under sub-clause 21.4:

"*If a Dispute arises between the Parties then either Party may refer the Dispute to the DAAB for its decision (whether or not any informal discussions have been held under Sub-Clause 21.3…and the following provisions shall apply:*

21.4.1 Reference of the Dispute to the DAAB:

The reference of a Dispute to the DAAB… shall:

(a) if Sub-Clause 3.7…applied to the subject matter of the Dispute, be made within 42 days of giving or receiving (as the case may be) an NOD under Sub-Clause 3.7.5… If the Dispute is not referred to the DAAB within this period of 42 days, such NOD shall be deemed to have lapsed and shall no longer be valid;

(b) state that it is given under this Sub-Clause;

(c) set out the referring Party's case relating to the Dispute;

(d) be in writing, with copies to the other Party and the Engineer; and

(e) for the DAAB of three persons, be deemed to have been received by the DAAB on the date it is received by the chairperson of the DAAB."

Glover & Hughes (2018) are of the opinion that owing to the requirement of both parties (and in this instance the Employer) to make available to the DAAB all information, access to site and appropriate facilities, the DAAB "*is designed to be integral in and to the smooth running of the project*". This is largely owing to the parties being required to co-operate with the DAAB to aid their decision-making process.

Failure by the Employer to provide the DAAB all the items under this sub-clause 21.4.2 will result in the Employer likely negatively affecting itself with the DAAB, as the DAAB will not be in a position (as they require to be) to make an informed ruling on the dispute at hand.

12.10.1.50 Comply with the decision of the DAAB (Sub-Clause 21.4.3)

In the case of *Ekurhuleni West College v Segal and Another (26624/2017) [2018] ZAGPPHC 662 (29 August 2018)* judge Vos held that the decision of the adjudicator is binding and that the obligation under the ruling of the adjudicator shall be met. The provisions in the FIDIC Red Book 2017 is similar in that the parties are required to comply with the decision of the DAAB, regardless of whether a party gives a NOD in respect of the decision of the DAAB. Glover & Hughes (2018) cite the case in South Africa of *Tubular Holdings (Pty) Ltd v DBT Technologies (Pty) Ltd (06757/2013) [2013] ZAGPJHC 155* as such a case where a party was held to the decision of the DAB (under the 1999 version of the DAB) regardless of whether a party gave a NOD in respect of such decision.

Failure by the Employer to comply with the decision of the DAAB may under sub-clause 21.7 [Failure to Comply with DAAB's Decision] ordinarily result in the Contractor enjoying the right to refer the failure directly to arbitration under sub-clause 21.6 [Arbitration], which arbitral tribunal "*shall have the power, by way of summary or other expedited procedure, to order, whether by an interim or provisional measure or an award (as may be appropriate under applicable law or otherwise), the enforcement of that decision.*"

12.10.1.51 Give a notice of dissatisfaction with the DAAB's decision (Sub-Clause 21.4.4)

In a change from the 1999 version, Glover & Hughes (2018) indicate that the Employer is now also required to give a NOD with the DAAB's decision. Such NOD is required to be given to the Contractor and copied to the DAAB and the Engineer; with the requirement being to state that such NOD is in fact a "Notice of Dissatisfaction with the DAAB's Decision" and be given within 28 days after receiving the DAAB's decision. Importantly, such NOD is required to set out the matter in dispute and crucially to give the reasons for dissatisfaction; failing which, the notice is not compliant with the terms of the contract.

Failure by the Employer to give the required NOD (under sub-clause 21.4.4) in respect of the decision of the DAAB results in it losing its entitlement to commence arbitration, with the only exceptions to this being that stated in the last paragraph of sub-clause 3.7.5 [Dissatisfaction with the Engineer's Decision], in sub-clause 21.7 [Failure to Comply with the DAAB's Decision] and in sub-clause 21.8 [No DAAB in Place]

12.10.1.52 Attempt amicable settlement of dispute before arbitration (Sub-Clause 21.5)

The onus under this sub-clause is for both parties to attempt to reach amicable settlement, this is a condition precedent to the referral of the matter to arbitration and sub-clause 21.5 [Amicable Settlement] provides that arbitration may commence on or after the 28th day after the day the NOD was given. Glover & Hughes (2018) argue that this is evidence of the FIDIC Red Book 2017 of attempting to ensure the smooth running of the project (by reducing the period from 56 days in the 1999 version of the Red Book). This period is not to be viewed as a cooling-off period but should rather truly be sought by the parties to resolve the matter at hand.

12.10.1.53 Immediately pay an amount due following the ruling in arbitration (Sub-Clause 21.6)

Sub-clause 21.6 [Arbitration] makes provision for the referral of disputes in one of any four routes:

(i) The issue of a NOD under sub-clause 21.4.4 followed by an attempt to amicably settle the dispute under sub-clause 21.5 [Amicable Settlement].
(ii) Where one party has failed to comply with an agreement or a final and binding determination of the Engineer (final paragraph of sub-clause 3.7.5.
(iii) Where one Party has failed to comply with a DAAB's decision (sub-clause 21.7 [Failure to Comply with DAAB's Decision]).
(iv) Where no DAAB is in place or being constituted (sub-clause 21.8 [No DAAB in Place])

Unless the parties agree otherwise the dispute shall be settled under the Rules of Arbitration of the International Chamber of Commerce; the dispute shall be settled by either one or three arbitrators whom shall be appointed in accordance with these rules; and lastly such arbitration shall be conducted in the language of the contract (as defined in sub-clause 1.4 [Law and Language].

According to Glover & Hughes (2018) the obligation under this sub-clause is for the Employer (or any party for that matter) to pay an amount (where an award so requires) to make such payment immediately to the Contractor without any certificate or notice being required. They go on to indicate that is so included to prevent any party from using the procedural requirements to delay payment of an amount awarded against it.

12.10.2 Risks due to the obligations of the Engineer

12.10.2.1 Issue clarification or instruction when notified about an ambiguity or discrepancy in the documents (Sub-Clause 1.5)

The obligation under sub-clause 1.5 [Priority of Documents] for the Engineer is simple in that it is required issue a clarification or instruction when notified (or when the ambiguity is discovered by itself), clarifying according to Glover & Hughes (2018) by way of instruction how best to deal with the same. Such instruction shall be given under sub-clause 3.5 [Engineer's Instructions].

Failure by the Engineer to fulfil this obligation means that the Engineer fails in its obligation under sub-clause 3.1 [The Engineer]: "*the Engineer, who shall carry out the duties assigned to the Engineer in the Contract*"; if the Employer considers the Engineer's failure to be of such a nature that drastic action is warranted, the Employer has the right to replace the Engineer under sub-clause 3.6 [Replacement of the Engineer].

12.10.2.2 Give notice when it becomes aware of an error or defect in a document (Sub-Clause 1.8)

The Engineer is obliged to give notice to the parties of an error or defect in a document prepared by the Contractor for use in the execution of the works.

Failure by the Engineer to fulfil this obligation means that the Engineer fails in its obligation under sub-clause 3.1 [The Engineer]: "*the Engineer, who shall carry out the duties assigned to the Engineer in the Contract*"; if the Employer considers the Engineer's failure to be of such a nature that drastic action is warranted, the Employer has the right to replace the Engineer under sub-clause 3.6 [Replacement of the Engineer].

12.10.2.3 Treat confidential information as confidential (Sub-Clause 1.12)

Refer to 12.10.1.4, except that the same obligation binds the Engineer.

Failure by the Engineer to fulfil this obligation means that the Engineer fails in its obligation under sub-clause 3.1 [The Engineer]: "*the Engineer, who shall carry out the duties assigned to the Engineer in the Contract*"; if the Employer considers the Engineer's failure to be of such a nature that drastic action is warranted, the Employer has the right to replace the Engineer under sub-clause 3.6 [Replacement of the Engineer].

12.10.2.4 Estimate the remaining contract price to be paid by the Employer (Sub-Clause 2.4)

The requirements laid down in the general conditions with regard to the Employer's financial arrangements to pay the contract price is dealt with in 12.10.1.9; 12.10.1.10 and 12.10.1.11. During this process the Engineer is simply required to determine what the balance is of the remaining contract price.

This would typically be done by determining the total amounts in EOT (if applicable) as determined under sub-clause 3.7 [Agreement or Determination] as well as what the value of the variations under sub-clause 13.3 [Variation procedure] and what the value of the latest IPC and progress since the same has been. By computing the current contract price and comparing the same to the latest cost of the work done, the Engineer can determine the estimate for the cost to complete the contract.

As a side note: such quantification will likely be done by the Engineer's duly authorised delegated Quantity Surveyor; with such delegation being done under sub-clause 3.4 [Delegation by the Engineer].

Failure by the Engineer to fulfil this obligation means that the Engineer fails in its obligation under sub-clause 3.1 [The Engineer]: "*the Engineer, who shall carry out the duties assigned to the Engineer in the Contract*"; if the Employer considers the Engineer's failure to be of such a nature that drastic action is warranted, the Employer has the right to replace the Engineer under sub-clause 3.6 [Replacement of the Engineer].

12.10.2.5 Act as a skilled professional and for the Employer (Sub-Clause 3.2)

Glover & Hughes (2018) cite the case of *Bolam v Friern Hospital Management Committee [1957] 1 W.L.R. 582* to indicate that under English law the Engineer shall act with reasonable skill and care, with the test being that as ruled by McNair that: "*The test is the standard of the ordinary skilled man exercising and professing to have that special skill.*"

In the second instance the Engineer acts for the Employer, without having the authority to amend the contract, with the Engineer's authority as specified or implied in the contract. The agreement and determination of claims under sub-clause 3.7 [Agreement or Determination] relieves the Engineer from seeking prior approval from the Employer before the Engineer exercises its authority under said sub-clause.

Failure by the Engineer to fulfil this obligation means that the Engineer fails in its obligation under sub-clause 3.1 [The Engineer]: "*the Engineer, who shall carry out the*

duties assigned to the Engineer in the Contract"; if the Employer considers the Engineer's failure to be of such a nature that drastic action is warranted, the Employer has the right to replace the Engineer under sub-clause 3.6 [Replacement of the Engineer].

12.10.2.6 Give notice when assigning or delegating certain duties (Sub-Clause 3.3)

Under this sub-clause 3.3 [The Engineer's Representative] the Engineer may delegate such duties as contemplated in sub-clause 3.4 [Delegation by the Engineer] to an Engineer's representative. According to Glover & Hughes (2018) such Engineer's representative shall be based on site and be subject to the same requirements that the Engineer is under sub-paragraphs (a) and (b) of sub-clause 3.1 [The Engineer]. If the Engineer's representative is to be temporarily absent from the site the Engineer is obliged to notify the Contractor of the replacement Engineer's representative, who shall be an "*equivalently qualified, experienced and competent replacement*".

Failure by the Engineer to fulfil this obligation means that the Engineer fails in its obligation under sub-clause 3.1 [The Engineer]: "*the Engineer, who shall carry out the duties assigned to the Engineer in the Contract*"; if the Employer considers the Engineer's failure to be of such a nature that drastic action is warranted, the Employer has the right to replace the Engineer under sub-clause 3.6 [Replacement of the Engineer].

12.10.2.7 Keep record of each management meeting (Sub-Clause 3.8)

Management meetings may be called by either the Engineer or the Contractor's representative, the purpose of which is to discuss "*arrangements for future work and/or other matters in connection with the works.*", which according to Glover & Hughes (2018) again reflects the emphasis on dispute avoidance. This is in part because further parties can attend such management meetings on the request of the Engineer and the Contractor's representative.

The Engineer is obliged to record such meetings and provide such copies of the record of the management meeting to all in attendance and the Employer, with the further obligation being that such record shall indicate responsibilities for actions required to be taken in accordance with the contract.

There is no specific remedy if the Engineer does not comply with this obligation and the Contractor is well advised to record such meeting if the Engineer does not do so. However, contractually a failure by the Engineer to fulfil this obligation means that the Engineer fails in its obligation under sub-clause 3.1 [The Engineer]: "*the Engineer, who shall carry out the duties assigned to the Engineer in the Contract*"; if the Employer

considers the Engineer's failure to be of such a nature that drastic action is warranted, the Employer has the right to replace the Engineer under sub-clause 3.6 [Replacement of the Engineer].

12.10.2.8 Consent to the proposed Contractor's representative (Sub-Clause 4.3)

In the first instance, the Contractor is required to appoint a Contractor's representative, who shall be named in the Contract Data. Such Contractor's representative shall be "*qualified, experienced and competent in the main Engineering discipline applicable to the Works and fluent in the language for communications defined in Sub-Clause 1.4…*". If the Contractor's representative is not named in the contract, the Contractor shall before the commencement date submit to the Engineer the particulars of the person the Contractor proposes to appoint as the Contractor's representative.

If there is a failure by the Engineer to consent to the proposed Contractor's representative the Contractor shall under sub-clause 4.3 "*similarly submit the name and particulars of another suitable replacement for such appointment. If the Engineer does not respond within 28 days after receiving this submission, by giving a Notice to the Contractor objecting to the proposed person or replacement, the Engineer shall be deemed to have given its/her consent.*" As is always the case, such consent is required under sub-clause 1.3 [Notices and Other Communications] not to be unreasonably withheld.

12.10.2.9 Promptly inspect and investigate unforeseen physical conditions (Sub-Clause 4.12.2)

For the purpose of this sub-clause, 'physical conditions' is defined as: "*natural physical conditions and physical obstructions (natural or man-made) and pollutants, which the Contractor encounters at the Site during the execution of the Works, including sub-surface and hydrological conditions but excluding climatic conditions at the Site and the effects of those climatic conditions.*"

Glover & Hughes (2018) argue that the burden of proof (as to whether such conditions were foreseeable) lies with the Contractor and indicates that this may very well prove to be a difficult task for the Contractor.

The obligation for the Engineer under this sub-clause 4.12.2 is to determine within 7 days of receiving such notice from the Contractor by way of inspection and investigation the unforeseen physical conditions which the Contractor has notified.

If the Engineer fails to inspect and does not advise the Contractor, it is arguable that the Contractor may be within its rights under sub-clause 4.12.4 [Delay and/or Cost] to be entitled to EOT and/or payment of such cost under sub-clause 20.2 [Claims for Payment and/or EOT].

12.10.2.10 Consent to remove from site any major items of Contractor's equipment (Sub-Clause 4.17)

Under sub-clause 1.1.16 'Contractor's Equipment' means: "*all apparatus, equipment, machinery, construction plant, vehicles and other items required by the Contractor for the execution of the Works. Contractor's Equipment excludes Temporary Works, Plant, Materials and other things intended to form or forming part of the Permanent Works.*"

Glover & Hughes (2018) indicate that it is unclear why this obligation of the Engineer to consent to the Contractor removing from site any major items of Contractor's equipment has been placed in the contract, with the possibility being that the Engineer's check is there to ensure that the intended items for removal from site are in fact no longer needed by the Contractor.

Failure by the Engineer to give such consent may result in the Contractor technically being in breach of a provision in the contract. Although I am hard pressed to imagine that this may be cause for concern in practical terms. Failure by the Engineer to fulfil this obligation means that the Engineer fails in its obligation under sub-clause 3.1 [The Engineer]: "*the Engineer, who shall carry out the duties assigned to the Engineer in the Contract*"; if the Employer considers the Engineer's failure to be of such a nature that drastic action is warranted, the Employer has the right to replace the Engineer under sub-clause 3.6 [Replacement of the Engineer]. As is always the case, such consent is required under sub-clause 1.3 [Notices and Other Communications] to not be unreasonably withheld.

12.10.2.11 Consent to the apparatus used for the measuring quantities of services consumed (Sub-Clause 4.19)

If the services and temporary utilities are provided for by the Employer, but paid for by the Contractor; the Engineer is required to consent to such apparatus proposed to be used for the measuring of the related quantities consumed by the Contractor. This potentially relates to "*electricity, gas, telecommunications, water and any other services the Contractor may require for the execution of the Works.*"

Failing such consent, the Engineer is likely to be obliged to accept the values for the quantities (at the rates so stated in the Employer's requirements) submitted by the Contractor in the statement as true and correct and is then required to certify the same for payment. As is always the case, such consent is required under sub-clause 1.3 [Notices and Other Communications] to not be unreasonably withheld.

12.10.2.12 Acknowledge additional working areas so identified by the Contractor (Sub-Clause 4.22)

According to Glover & Hughes (2018) the Contractor is required to "*confine its operations to the Site*", however the required temporary rights of way to access the site is required to be obtained by the Contractor under sub-clause 4.13 [Rights of Way and Facilities]. If the Contractor requires additional working areas, such working areas may be obtained by the Contractor and must be agreed to by the Engineer.

There is no specific remedy for the Contractor if the Engineer does not acknowledge such additional working areas. Failure by the Engineer to give such consent may result in the Contractor technically being in breach of a provision in the contract. Failure by the Engineer to fulfil this obligation means that the Engineer fails in its obligation under sub-clause 3.1 [The Engineer]: "*the Engineer, who shall carry out the duties assigned to the Engineer in the Contract*"; if the Employer considers the Engineer's failure to be of such a nature that drastic action is warranted, the Employer has the right to replace the Engineer under sub-clause 3.6 [Replacement of the Engineer].

12.10.2.13 Inspect and identify archaeological findings (Sub-Clause 4.23)

If the Contractor finds any "*fossils, coins, articles of value or antiquity, and structures and other remains or items of geological or archaeological interest on the Site*", such items shall be placed under the care and authority of the Employer. The Contractor shall as soon as practically possible give the Engineer notice to inspect and/or investigate the finding before it is disturbed. The Engineer shall issue an instruction to the Contractor how to deal with the finding. Glover & Hughes (2018) argue that such finding may have a significant impact on the Contractor's programme.

If the Engineer fails to inspect and does not instruct the Contractor how best to deal with the archaeological finding, it is arguable that the Contractor may be within its rights under this sub-clause 4.23 [Archaeological and Geological Findings] to be entitled to EOT and/or payment of such cost under sub-clause 20.2 [Claims for Payment and/or EOT].

12.10.2.14 Consent to the Contractor's proposed subcontractors (Sub-Clause 5.1)

Sub-clause 1.1.78 defines a 'subcontractor' as: "*any person named in the Contract as a subcontractor, or any person appointed by the Contractor as a subcontractor or designer, for a part of the Works; and the legal successors in title to each of these persons.*"

There are limits to the extent that the Contractor may subcontract, with these firstly being the percentage stated in the Contract Data of the accepted contract amount, and secondly being any works specifically stated in the Contract Data which is not permitted to be subcontracted. Like in the NEC4 ECC, under the FIDIC Red Book the Contractor is responsible for subcontractor "*shall be responsible for the work of all subcontractors…and for the acts and defaults…as if they were acts of the Contractor*". This is in contrast to the selected and nominated subcontractor regime in the JBCC, as so described in 12.4.2.12 to 12.4.2.23.

The Contractor is obliged to obtain the Engineer's prior consent for a proposed subcontractor, except for suppliers of materials and for a subcontractor which is named in the contract.

The Contractor is required to submit to the Engineer the following information for the proposed subcontractors: name, address, detailed particulars, relevant experience of the subcontractor and the work intended to be done by the subcontractor.

Failure by the Engineer to respond to such submission (within 14 days of receipt of such submission) by giving the Contractor a notice of its objection to the proposed subcontractor, the Engineer is deemed to have given its consent. As is always the case, such consent is required under sub-clause 1.3 [Notices and Other Communications] to not be unreasonably withheld.

12.10.2.15 Instruct the Contractor to employ a nominated subcontractor (Sub-Clause 5.2.1)

According to Glover & Hughes (2018) it is preferable to make the nomination of a subcontractor clear in the tender documents as this provides the Contractor (at the time still the tenderer) with the necessary information to accurately price for the works, however the provision exists in the general conditions for the Engineer to instruct the Contractor to appoint a nominated subcontractor under sub-clause 13.4 [Provisional Sums]. Glover & Hughes (2018) further indicate that the nomination of subcontractors

has long been on the decline, in the UK at least; however they continue to indicate that there are certain advantages to the nomination of subcontractors according to the 1999 FIDIC guide, these are:

"*(i) involvement in the choice of a specialist subcontractor;*

(ii) Involvement in the choice of plant; and

(iii) The avoidance of participation in the co-ordination of the interface between the nominated subcontractors and the Contractors' Works."

Although there is no specific remedy for a failure by the Engineer to instruct the Contractor to appoint a nominated subcontractor for a specific provisional sum, it is entirely possible that the Contractor may appoint a subcontractor of its own liking to undertake such work, this is specifically only applicable where the Engineer has failed to instruct which nominated subcontractor is to be appointed, not where a nominated subcontractor is identified in the Contract Data.

12.10.2.16 Notify the Contractor of the amount to be paid directly to a nominated subcontractor by the Employer (Sub-Clause 5.2.4)

This provision in the FIDIC Red Book 2017 is like the provisions under the JBCC PBA 6.2, where the Contractor unjustifiably withholds payment from a nominated subcontractor the amounts can be paid directly to such subcontractor by the Employer.

The Engineer may request the Contractor to provide proof that a nominated subcontractor has in fact been paid the amounts due (less retention and applicable deductions) as certified in previous payment certificates. Glover & Hughes (2018) indicate that the purpose behind this sub-clause is for the Employer to keep track of whether the nominated subcontractor is getting paid the amounts due.

The Contractor is of course at liberty to withhold payment (or a part thereof) in the event that entitlement to such effect exists and that the nominated subcontractor has in fact been notified of the same.

The Engineer is obliged to give notice to the Contractor that a deduction from the next IPC will be made for the amount paid directly to the nominated subcontractor by the Employer.

Failure by the Engineer to give such notice to the Contractor may result in the Engineer losing the right to deduct such amount from the next IPC under sub-clause 14.6.1 [The IPC], as the Contractor has the right to first be notified that such deduction will be made.

12.10.2.17 Shall not recruit the Contractor's personnel (Sub-Clause 6.3)

According to Glover & Hughes (2018) the Contractor nor the Employer (and by extension the Engineer) is at any right recruit each other's personnel in terms of this sub-clause 4.2 [Performance Security]. They do however have misgivings about the weight of the clause and argue that it may be difficult for the Contractor to prove and quantify damage for a breach of this obligation.

12.10.2.18 Consent to work being carried out outside normal working hours (Sub-Clause 6.5)

No work is permitted to be carried out on site on locally recognised days of rest and outside the normal working hours as stated in the Contract Data (which Contract Data according to Glover & Hughes (2018) is a higher priority document than the general conditions under sub-clause 1.5 [Priority of Documents]).

If such work required to be done on locally recognised days of rest or outside the working hours is not stated in the Contract Data, the Engineer is required to consent to the same. Such consent shall take into consideration the applicable labour laws. In South Africa the *Basic Conditions of Employment Act No. 75 of 1997* holds that under section 9(a) normal working hours are limited to 45 hours per week and under section 10(1)(b)(i) work more than 3 hours overtime on any single day and under section 10(1)(b)(ii) work more than 10 hours total overtime in a week.

Failure to give such required consent will have the effect that the Contractor does not enjoy the right to work outside normal working hours, with the exception being when the work is "*unavoidable or necessary for the protection of life*". As is always the case, such consent is required under sub-clause 1.3 [Notices and Other Communications] to not be unreasonably withheld.

12.10.2.19 Agree to proposed changes to Contractor's records (Sub-Clause 6.10)

Under sub-clause 6.10 [Contractor's Records] the Contractor is obliged to submit with each progress report the following records (unless otherwise proposed by the Contractor and so agreed by the Employer):

"(a) Occupations and actual working hours of each class of Contractor's Personnel;

(b) the type and actual working hours of each of the Contractor's Equipment;

(c) the types of Temporary Works used;

(d) the types of Plant installed in the Permanent Works; and

(e) the quantities and types of Materials used

For each work activity shown in the Programme, at each work location and each day of work."

According to Glover & Hughes (2018) this information is particularly important, as the same is required to be included in the progress reports under sub-clause 4.20 [Progress Reports], the submission of this appears to be a condition for payment and could very well form the basis of variations made under sub-clause 13 [Variations and Adjustments] and of a claim under sub-clause 20.2 [Claims For Payment and/or EOT].

The Engineer is well advised to consider such a proposed change very carefully, as the record keeping of the above information is of importance to both the Contractor and the Employer, as such frequent distribution of the same is of importance. As is always the case, such consent is required under sub-clause 1.3 [Notices and Other Communications] to not be unreasonably withheld. However, in saying that there is likely little risk for failure by the Engineer to respond to such a request, as the Contractor needs approval from the Engineer to change the requirements under this sub-clause and there is no deeming provision stated.

12.10.2.20 Consent to change of key personnel (Sub-Clause 6.12)

In the first instance Glover & Hughes (2018) indicate that if the Employer requires the Contractor to appoint key personnel, the Employer is required to include such requirement in the Employer's requirements.

Key Personnel is defined under sub-clause 1.1.48 as: "*the positions (if any) of the Contractor's Personnel, other than the Contractor's Representative, that are stated in the Specification.*"

The Contractor is required to appoint natural persons named in the Contract Data (as part of the tender) in the positions so identified as key personnel positions. The Engineer is required to consent to any Contractor's notice for the proposal for a change in key personnel, with such notice requiring the Contractor to submit the name and particulars of such proposed person.

Failure by the Engineer to give such consent within 14 days of receipt of the notice from the Contractor shall have the effect that the Engineer is deemed to have given consent. As

is always the case, such consent is required under sub-clause 1.3 [Notices and Other Communications] to not be unreasonably withheld.

12.10.2.21 Consent to use of materials submitted by the Contractor (Sub-Clause 7.2)

The Contractor is required to submit to the Engineer for its consent the following samples and relevant information, prior to using such materials in the works:

"*(a) manufacturer's standard samples of Materials and samples specified in the Contract, all at the Contractor's cost; and*

(b) additional samples instructed by the Engineer as a Variation. Each sample shall be labelled as to origin and intended use in the Works."

As is always the case, such consent is required under sub-clause 1.3 [Notices and Other Communications] not to be unreasonably withheld, as such Glover & Hughes (2018) argues that the Engineer is to provide scientific evidence to support the rejection of certain materials (as in laboratory test reports); they further indicate (under the auspice of sub-clause 5.2.2) that the Engineer has 21 days to carry out the review and that if the Engineer fails to give a notice to the Contractor within the review period, the Engineer is deemed to have given a notice of no-objection.

12.10.2.22 Promptly instruct the Contractor that the Employer's personnel do not require to inspect material or plant (Sub-Clause 7.3)

Refer to 12.10.1.17 for the Employer's obligations with regards to inspection of material or plant.

The obligation for the Engineer under sub-clause 7.3 [Inspection] is to promptly instruct the Contractor that the Employer's personnel do not required to inspect material and/or plant.

Failure by the Engineer to give the Contractor such instruction gives the Contractor the right to proceed under this sub-clause to cover up, put out of sight or package for transport or transport materials and/ or plant.

12.10.2.23 Notify the Contractor of the commencement date (Sub-Clause 8.1)

Commencement Date is defined under sub-clause 1.1.7 as: "*…the date as stated in the Engineer's Notice issued under Sub-Clause 8.1 [Commencement of the Works]."*

Under this sub-clause 8.1 [Commencement of Works] the Engineer is obliged to give the Contractor at the very least 14 days' notice of the commencement date; such commencement date shall be within 42 days of the date the Contractor receives the Letter of Acceptance, unless otherwise stated in the particular conditions. This notice by the Engineer is of importance, as Glover & Hughes (2018) confirms that the time for completion runs from the commencement date.

Glover & Hughes (2018) continue to add that there are thirteen other dates and actions that are triggered by the commencement date:

(i) The Time for Completion (detailed in sub-clause 8.2 [Time for Completion]). Calculated in days from the Commencement Date;

(ii) The time for access to the site (detailed in sub-clause 2.1). Calculated in days from the Commencement Date;

(iii) Performance Security: (detailed in sub-clause 4.2 [Performance Security]). Required from the Contractor within 28 days of receiving the Letter of Acceptance;

(iv) Contractor's Representative (detailed in sub-clause 4.3 [Contractor's Representative]). Unless named in the Contract, before the Commencement Date, submit to the Engineer for consent, details of the proposed Contractor's Representative;

(v) Error in any item of reference (detailed in sub-clause 4.7.2). If the Contractor the same, a Notice of the error shall be given to the Engineer within the date set on in the Contract Data. This date is calculated from the Commencement Date;

(vi) Health and safety manual (detailed in sub-clause 4.8 [Health and Safety Requirements]). Required within 21 days of the Commencement Date and before commencing any construction on the Site;

(vii) Quality Management System (detailed in sub-clause 4.9 [Quality Management and Compliance Verification System]). Shall be submitted to the Engineer within 28 days of the Commencement Date;

(viii) Initial programme (detailed in sub-clause 8.3 [Programme]). Shall be submitted by the Contractor within 28 days of receiving the Commencement Date Notice;

(ix) The first Progress Report (detailed in sub-clause 20 [Employer's and Contractor's Claims]). Shall cover the period until the end of the first month after the Commencement Date;

(x) Schedule of Payments (detailed in sub-clause 14.4 [Schedule of Payments]). If the Contract fails to submit the same, then the Contractor shall submit non-binding estimates of the payments which it expects to become due during each period of three months. The first estimate must be submitted within 42 days from the Commencement Date;

(xi) If the Contractor fails to receive a Notice of the Commencement Date within 180 days from receiving the Letter of Acceptance (detailed in sub-clause 16.2(e)), it is a ground for termination under clause 16 [Suspension and Termination by Contractor];

(xii) Take full responsibility for the care of the Works and Goods (detailed in sub-clause 17.3 [Intellectual and Industrial Property Rights]). The Contractor carries this responsibility from the Commencement Date until the Taking-Over Certificate is issued;

(xiii) Contractor shall insure and keep insured (detailed in sub-clause 19.2.1) in the joint names of the Parties from the Commencement Date until the date of issue of the Taking-Over Certificate for the Works.

According to Glover & Hughes (2018) failure by the Engineer to give such notice may very well give the Contractor grounds for termination.

12.10.2.24 Give advance warning to the parties of listed events and circumstances (Sub-Clause 8.4)

Refer to 12.10.1.22, except that the obligation is for the Engineer.

12.10.2.25 Jointly with the Contractor examine the works or plant or materials affected by suspension (Sub-Clause 8.13)

Under sub-clause 8.9 [Employer's Suspension] the Employer enjoys the right to suspend the works by way of an instruction from the Engineer to the Contractor to that effect; such notice shall state the date and cause of the suspension. If the cause of the suspension is the Contractor's responsibility, then clauses 8.10-8.12 does not apply.

Under this sub-clause 8.13 [Resumption of Work] the Engineer is obliged to jointly with the Contractor perform an examination of the works or plant or materials affected by the

suspension, with the Engineer being further obliged to "*record any deterioration, loss, damage or defect in the Works or Plant or Materials which has occurred during suspension and shall provide this to the Contractor.*" Glover & Hughes (2018) indicate that the reasoning behind this joint examination is for the Engineer and the Contractor to have an agreement as to what the result of the suspension was, so as to avoid possible later disputes.

Failure by the Engineer to fulfil this obligation means that the Engineer fails in its obligation under sub-clause 3.1 [The Engineer]: "*the Engineer, who shall carry out the duties assigned to the Engineer in the Contract*"; if the Employer considers the Engineer's failure to be of such a nature that drastic action is warranted, the Employer has the right to replace the Engineer under sub-clause 3.6 [Replacement of the Engineer].

12.10.2.26 Send a copy of the test results of tests carried out by the Employer (Sub-Clause 9.2)

If the Contractor unduly delays the tests on completion, the Engineer may give a notice to the Contractor to carry out such tests within 21 days of receiving the notice. The Engineer is obliged (if the Contractor fails to perform the tests during this time) to give notice to the Contractor that the Employer's personnel will proceed with the tests; which according to Glover & Hughes (2018) will be at the Contractor's risk and cost. Such test results shall be issued by the Engineer to the Contractor within 28 days of the tests being completed.

Interestingly, sub-clause 9.2 [Delayed Tests] states that: "*Whether or not the Contractor attends, these Tests on Completion shall be deemed to have been carried out in the presence of the Contractor and the results of these tests shall be accepted as accurate.*"

The general conditions is silent as to what the remedy for the Contractor is if the Engineer does not issue such test result, however one could argue that this is a gross failure of the Engineer's duty and that the Contractor has the right to such test results; if not, then then the Contractor would not be in a position to defend itself in the future if the Employer makes claims against the Contractor. As such the Contractor likely has the right to a dispute under sub-clause 21.4 [Obtaining a DAAB's Decision].

12.10.2.27 Immediately issue a taking over certificate when the Employer's personnel prevent the Contractor from carrying out tests on completion (Sub-Clause 10.3)

Under 6.2.2.18 and 12.10.2.26 the Engineer's obligations are discussed with reference to the review and the response to the Contractor's tests on completion. However, under sub-clause 10.3 [Interference with Tests on Completion] the Engineer has a further obligation related to tests on completion, specifically when the Employer's personnel prevent the Contractor from carrying out tests on completion for more than 14 days.

Firstly, the Contractor is obliged to give notice to the Engineer describing such prevention; after which the Employer shall be deemed to have taken over the works on the date the tests on completion would have been completed. Subsequent to the above, the Engineer shall immediately issue a taking over certificate for the works (or section).

Note that such taking over certificate does not absolve the Contractor from its obligation to carry out the tests, the Engineer is further required to give notice to the Contractor (of not less than 14 days) after which the Contractor may carry out the tests on completion.

Failure by the Engineer under sub-clause 10.3 [Interference with Tests on Completion] may not have a negative effect in the first instance (with respect to the taking over certificate), as the Employer is deemed to have taken over the works (or section), as such the clerical function is failed in. However, in the second instance the Contractor does not get the date from which the tests on completion can be performed and can as such not complete all of its obligations under the contract. This is a gross failure of the Engineer's duties, as such this is a failure by the Engineer to fulfil this obligation means that the Engineer fails in its obligation under sub-clause 3.1 [The Engineer]: "*the Engineer, who shall carry out the duties assigned to the Engineer in the Contract*"; if the Employer considers the Engineer's failure to be of such a nature that drastic action is warranted, the Employer has the right to replace the Engineer under sub-clause 3.6 [Replacement of the Engineer].

12.10.2.28 Agree or determine the cost of remedying defects (Sub-Clause 11.2)

Under sub-clause 11.1 [Completion of Outstanding Work and Remedying Defects] (b) the Contractor is obliged to "*execute all work required to remedy defects or damage…*" with the Employer enjoying the right that the cost and risk of remedying such defects or damage is borne by the Contractor, if the work is attributable to:

"*(a) design (if any) of the Works for which the Contractor is responsible;*

(b) Plant, Materials or workmanship not being in accordance with the Contract;

(c) improper operation or maintenance which was attributable to matters for which the Contractor is responsible…; or

(d) failure by the Contractor to comply with any obligation under the Contract."

If the Contractor is of the opinion that the work is attributable to any other cause, then the Contractor is to give notice to the Engineer to seek its agreement or determination under sub-clause 3.7 [Agreement or Determination] of the cause of the work in question, in which case if the cause is determined to be attributable to another cause the work shall be carried out under sub-clause 13.3.1 [Variation by Instruction].

Refer to 6.2.2.6 to 6.2.2.10 for the results of non-compliance by the Engineer to act on its obligation to agree or determine under sub-clause 3.7 [Agreement or Determination].

12.10.2.29 Notify the Contractor regarding further tests after remedying defects (Sub-Clause 11.6)

The Contractor is required under sub-clause 11.6 [Further Tests and Remedying Defects] to submit to the Engineer its proposal of repeated tests within 7 days of the completion of any work of remedying any defect or damage. The Engineer in turn, is obliged within 7 days of receiving such notice to either agree with the proposed testing, or to instruct the repeated test that are necessary to demonstrate that the works, section, part and/or plant comply with the contract.

Glover & Hughes (2018) warn that the testing regime for re-testing should be that which was set out in the contract originally, certainly not a more onerous one and that the cost of such re-testing is borne by the Contractor under the ambit of sub-clause 11.2 [Cost of Remedying Defects].

One could argue that a failure by the Engineer to perform this obligation is a gross failure, however the Contractor would likely be obliged in any event to carry on with its proposed testing described in the notice to the Engineer.

12.10.2.30 Issue the performance certificate (Sub-Clause 11.9)

The performance certificate is defined under sub-clause 1.1.62 as: "*the certificate issued by the Engineer (or deemed to be issued) under Sub-Clause 11.9 [Performance Certificate].*"

Under sub-clause 11.9 [Performance Certificate] the contract is clear that performance of the Contractor's obligations is not completed until the Engineer issues the performance certificate. The Engineer's obligation is to issue the performance certificate (with a copy to the Employer and to the DAAB) within 28 days of the later of the expiry date of the DNP or as soon thereafter as the Contractor has supplied all the Contractor's documents and completed and tested all the works in accordance with the contract.

The Engineer is deemed to have issued the performance certificate if it fails to perform this obligation within this period of 28 days, with the performance certificate being deemed to be issued 28 days from the date it ought to have been issued.

12.10.2.31 Notify the Contractor of works to be measured on site (Sub-Clause 12.1)

Glover & Hughes (2018) provide an excellent summary of this sub-clause 12.1 [Works to be Measured], as follows:

- The value of the work is determined under this sub-clause by means of measurement;
- When on site measurement is required, the Engineer is required to give the Contractor 7 days' notice to the Contractor's representative who shall either attend or provide the particulars requested;
- Failure by the Contractor to attend means that the Engineer's measurement is deemed to accepted as accurate;
- Measurement records (for all items stated in the specification) are required to be prepared by the Engineer and to be agreed to (and signed off) by the Contractor; and
- If the Engineer and the Contractor are unable to agree, then the Contractor is required within 14 days to give a notice of disagreement, failing which the Engineer's records are deemed to be accurate.

If the Engineer requires any part of the work to be measured on site, it is obliged to give no less than 7 days' notice to the Contractor of the part to be measured and which place on site the measurement is required to be made at.

There is no specific remedy to the Engineer failing to notify the Contractor of works to be measured on site; however, the Engineer will simply not be able to accurately determine the quantity of the works in question on site, to which the Contractor is likely to not agree (by notice of disagreement), the result of which is that the Engineer will have to agree or determine (under sub-clause 3.7 [Agreement or Determination] in a fair and unbiased manner) and will as such likely be forced to give such notice to measure on site.

12.10.2.32 Prepare the measures for the permanent works to be measured from records (Sub-Clause 12.1)

The Guidance Notes contained in the Red Book advise that if any of the permanent works is to be measured according to the records of its construction, then such part is required to be identified and the records to be made are to be included in the specification.

The obligation under sub-clause 12.1 [Works to be Measured] is that the Engineer is obliged to prepare the measures for the permanent works identified in the specification from records, with such records prepared by the Engineer. The Engineer is further required to give notice of not less than 7 days to the Contractor of the time and place to meet the Contractor's representative to agree the Engineer's records. Failure by the Contractor to attend such meeting shall deem the Contractor to have accepted such records as accurate.

Failure by the Engineer of this obligation would be a gross failure of its core obligations, which means that the Engineer fails in its obligation under sub-clause 3.1 [The Engineer]: "*the Engineer, who shall carry out the duties assigned to the Engineer in the Contract*"; if the Employer considers the Engineer's failure to be of such a nature that drastic action is warranted, the Employer has the right to replace the Engineer under sub-clause 3.6 [Replacement of the Engineer] in order for this obligation to be met. In addition to the possible replacement of the Engineer, the Contractor is likely to lodge a dispute sub-clause 21.4 [Obtaining a DAAB's Decision].

12.10.2.33 Agree or determine the measurement records (Sub-Clause 12.1)

If the Contractor disagrees with the Engineer on the accuracy of the site measurements or the records and gives its notice of disagreement to this effect (within 14 days of such meeting to agree the measurement or records), the Engineer is obliged under sub-clause 12.1 [Works to be Measured] to agree or determine the measurements or records (under sub-clause 3.7 [Agreement or Determination] in a fair and unbiased manner).

Until the measurement or records is agreed, the Engineer is obliged to value a provisional measurement for the work for the purpose of interim payment certificates.

Refer to 6.2.2.6 to 6.2.2.10 for the results of non-compliance by the Engineer to act on its obligation to agree or determine under sub-clause 3.7 [Agreement or Determination].

Failure by the Engineer of this obligation would be a gross failure of its core obligations, which means that the Engineer fails in its obligation under sub-clause 3.1 [The Engineer]: "*the Engineer, who shall carry out the duties assigned to the Engineer in the Contract*"; if

the Employer considers the Engineer's failure to be of such a nature that drastic action is warranted, the Employer has the right to replace the Engineer under sub-clause 3.6 [Replacement of the Engineer] in order for this obligation to be met. In addition to the possible replacement of the Engineer, the Contractor is likely to lodge a dispute sub-clause 21.4 [Obtaining a DAAB's Decision].

12.10.2.34 Value each item of work by applying each item's measurement with the appropriate rate or price for the item (Sub-Clause 12.3)

According to Glover & Hughes (2018) the evaluation of the work is to proceed under sub-clause 12.1 [Works to be Measured] and 12.2 [Method of Measurement] with the appropriate rate or price for each item; with each new item being priced on the basis of similar work. They go on to indicate that while it is the Engineer's responsibility to value the work and that the valuation is done on a "measure and value basis", sub-clause 12.1 [Works to be Measured] encourages the Engineer and the Contractor to agree such measures. If there is disagreement of such valuation, and the Contractor has given its notice of disagreement, the Engineer is obliged to be fair and unbiassed in its determination.

Failure by the Engineer of this obligation would be a gross failure of its core obligations, which means that the Engineer fails in its obligation under sub-clause 3.1 [The Engineer]: "*the Engineer, who shall carry out the duties assigned to the Engineer in the Contract*"; if the Employer considers the Engineer's failure to be of such a nature that drastic action is warranted, the Employer has the right to replace the Engineer under sub-clause 3.6 [Replacement of the Engineer] in order for this obligation to be met. In addition to the possible replacement of the Engineer, the Contractor is likely to lodge a dispute sub-clause 21.4 [Obtaining a DAAB's Decision].

12.10.2.35 Agree or determine a rate or price (Sub-Clause 12.3)

Under this sub-clause 12.3 for "*each item of work, the appropriate rate for the item shall be the rate or price specified in the Bills of Quantities…or if there is no such item, specified for similar work*" (International Federation of Consulting Engineers (FIDIC), 2017).

However, there are conditions to such new rates for the following circumstances under sub-clause 12.3 [Valuation of the Works]:

"(a) the item is not identified in, and no rate or price for this item is specified in, the Bill of Quantities or other Schedule and no specified rate or price is appropriate

because the item of work is not of similar character, or is not executed under similar conditions, as any item in the Contract

(b) *(i) the measured quantity of the item is changed by more than 10 per cent from the quantity of this item in the Bill of Quantities or other Schedule,*

(ii) this change in quantity multiplied by the rate or price specified in the Bill of Quantities or other Schedule for this item exceeds 0.01per cent of the Accepted Contract Amount,

(iii) this change in quantity directly changes the Cost per unit quantity of this item by more than 1 per cent, and -

(iv) this item is not specified in the Bill of Quantities or other Schedule as a 'fixed rate item', 'fixed charge' or similar term referring to a rate or price which is not subject to adjustment for any change-in quantity; and/or

(c) *the work is instructed under Cl..l3 [Variations and Adjustments] and sub-para.(a) or (b) above applies*."

Additionally, under sub-clause 12.3 [Valuation of the Works] each new rate or price is required to be derived from the relevant rates or prices already in the Bills of Quantities. If no existing rates are appropriate, then the Contractor is required to submit a rate based on a reasonable cost plus the profit stated in the Contract Data (5% default if not stated otherwise) – if no agreement is reached on the rate proposed then the Contractor is required to give notice to such effect to the Engineer who in turn is required to agree or determine such new rate under sub-clause 3.7 [Agreement or Determination].

Refer to 6.2.2.6 to 6.2.2.10 for the results of non-compliance by the Engineer to act on its obligation to agree or determine under sub-clause 3.7 [Agreement or Determination]. The Contractor is likely to lodge a dispute sub-clause 21.4 [Obtaining a DAAB's Decision] if the Engineer fails in this obligation.

12.10.2.36 Notify the Contractor of cancelling, confirming or altering an instruction to vary the works (Sub-Clause 13.1)

Under sub-clause 13.1 [Right to Vary] the Engineer has the right to vary the works under sub-clause 13.3 [Variation Procedure] "*at any time before issuing the Taking-Over Certificate for the Works.*" However, such variations cannot be for work to be carried out by the Employer or any other Contractor, unless agreed to by the parties.

Under sub-clause 13.1 [Right to Vary] a variation may include for the following:

"*(i) changes to the quantities of any item of work included in the Contract (however, such changes do not necessarily constitute a Variation);*

(ii) changes to the quality and other characteristics of any item of work;

(iii) changes to the levels, positions and/or dimensions of any part of the Works;

(iv) the omission of any work, unless it is to be carried out by others without the agreement of the Parties;

(v) any additional work, Plant, Materials or services necessary for the Permanent Works, including any associated Tests on Completion, boreholes and other testing and exploratory work; or

(vi) changes to the sequence or timing of the execution of the Works."

The Contractor is bound by the variation instructed under sub-clause 13.3.1 and is required to execute such variation promptly, unless the Contractor promptly gives notice to the Engineer stating that:

"*(a) The varied work was unforeseeable;*

(b) the Contractor cannot obtain the Goods required for the Variation;

(c) it will affect the Contractor's health and safety and environmental obligations,"
(Glover & Hughes, 2018)

The Engineer's mandatory obligation under sub-clause 13.1 [Right to Vary] is to respond to the Contractor's notice, by giving a notice to the Contractor which either cancels, confirms or varies the instruction given in the first place; which instruction shall be taken as an instruction under sub-clause 13.3.1 [Variation by Instruction].

Failure by the Engineer to respond to the Contractor's notice with its own notice will likely have the result that the variation instructed in the first place will not stand, that is if the Contractor's reason for the notice is in line with the items (a) – (c) of sub-clause 13.1 [Right to Vary].

12.10.2.37 Notify the Contractor of its consent to the Contractor's proposal to vary (Sub-Clause 13.2)

Under sub-clause 13.2 [Value Engineering] the Contractor may at any time submit a written proposal to the Engineer which in the Contractor's opinion will:

"*(a) accelerate completion;*

(b) reduce the cost to the Employer of executing, maintaining or operating the Works;

(c) improve the efficiency or value to the Employer of the completed Works; or

(d) otherwise be of benefit to the Employer."

The Engineer's obligation is to respond to the Contractor's proposal by way of giving or withholding consent, however the Engineer's consent is at the Employer's discretion; as such the Engineer first must present such proposal to the Employer in order to get the approval from the Employer to consent to such proposal. While this process is ongoing the Contractor is required to continue with the works as if this proposal has not been submitted.

If the Employer is of the opinion that such proposal will be of benefit and provides the Engineer with the necessary approval to give such consent to the Contractor, then the Engineer consents to such proposal by way of a notice of instruction under sub-clause 13.3.1 [Variation by Instruction].

Failure by the Engineer to take such proposal to the Employer for its consideration may result in the Contractor submitting a claim against the Employer to recover the cost that the Contractor incurred in compiling such proposal, although the Contractor carries such cost under the contract the Engineer may not unreasonably withhold consent under sub-clause 1.3 [Notices and Other Communications].

12.10.2.38 Agree or determine EOT or adjustment to the contract value related to a variation instruction (Sub-Clause 13.3.1)

For the purpose of this obligation, one must consider the variation by instruction scheme in summary in order to fully understand what it is that the Engineer is obliged to agree or determine under sub-clause 3.7 [Agreement or Determination] (as that is what the obligation is in this item) the EOT if any and/or the adjustment to the contract price.

Under sub-clause 13.3.1 [Variation by Instruction] the Engineer may issue an instruction (by giving notice to the Contractor) to vary the works under the rights bestowed in sub-clause 3.5 [Engineer's Instructions]. The Contractor is obliged to proceed with the variation so instructed and submits within 28 days of receipt of the Engineer's notice the detailed particulars including:

"*(a) a description of the varied work performed or to be performed, including details of the resources and methods adopted or to be adopted by the Contractor;*

(b) a programme for its execution and the Contractor's proposal for any necessary modifications (if any) to the Programme according to Sub-Clause 8.3…and to the Time for Completion; and

(c) the Contractor's proposal for the adjustment to the Contract Price by valuing the Variation in accordance with Clause 12…with supporting particulars…If the Parties have agreed to the omission of any work which is to be carried out by others, the Contractor's proposal may also include the amount of any loss of profit and other losses and damages suffered (or to be suffered) by the Contractor as a result of the omission." (International Federation of Consulting Engineers (FIDIC), 2017)

Refer to 6.2.2.6 to 6.2.2.10 for the results of non-compliance by the Engineer to act on its obligation to agree or determine under sub-clause 3.7 [Agreement or Determination]. The Contractor is likely to lodge a claim under sub-clause 20.2 [Claims for Payment and EOT] if the Engineer fails in this obligation, as the Contractor is under the obligation to carry out the variation so instructed and could very well have incurred costs by the time the Engineer is obliged to agree or determine the EOT or cost.

12.10.2.39 Notify the Contractor of its consent to the Contractor's proposal to vary (Sub-Clause 13.3.2)

Glover & Hughes (2018) asserts that under the FIDIC Red Book there are two routes to variations, them being under sub-clause 13.3.1 [Variation by Instruction] the Engineer's instructions to vary and under sub-clause 13.3.2 [Variation by Request for Proposal] the Engineer's request for the Contractor's proposal to vary.

Under the second option as stated in sub-clause 13.3.2 [Variation by Request for Proposal] the Engineer requests the Contractor (by way of a notice) to submit a proposal to vary, to which the Contractor is obliged to respond either indicating that it cannot comply with providing such proposal requested; or by providing a proposal for the works requested, a programme and a proposed evaluation. Subsequent to taking such proposal under review the Engineer is obliged to promptly consent or otherwise by way of notice to the Contractor; during which period the Contractor in turn is required to not delay any work while awaiting the Engineer's response.

The Engineer is obliged to instruct a variation with or without comments when such consent is granted to the Contractor.

Failure by the Engineer to give such consent results in the Contractor enjoying the right under sub-clause 13.3.2 [Variation by Request for Proposal] to submit a claim under sub-clause 20.2 [Claims for payment and/or EOT] for the payment of such cost if the Contractor has incurred any cost in the preparation of such proposal requested by the Engineer.

12.10.2.40 Instruct the Contractor regarding provisional sums (Sub-Clause 13.4)

'Provisional sums' is defined under sub-clause 1.1.66 as: "*a sum (if any) which is specified in the Contract by the Employer as a provisional sum, for the execution of any part of the Works or the supply of Plant, Materials or services under Sub-Clause 13.4…*"

Importantly, each provisional sum is only used under the Engineer's instruction, failing which such provisional sum remains provisional and will ultimately be removed. The Engineer may instruct for each provisional sum under this sub-clause 13.4 [Provisional Sums]:

"*(a) work to be executed (including Plant, Materials or services to be supplied) by the Contractor, and for which adjustments to the Contract Price shall be agreed or determined under Sub-Clause 13.3.1… and/or*

(b) Plant, Materials or services to be purchased by the Contractor for a nominated Subcontractor…or otherwise; and for which there shall be included in the Contract Price:

(i) the actual amounts paid (or due to be paid) by the Contractor; and

(ii) a sum for overhead charges and profit, calculated as a percentage of these actual amounts by applying the relevant percentage rate (if any) stated in the applicable Schedule. If there is no such rate, the percentage stated in the Contract Data shall be applied." (International Federation of Consulting Engineers (FIDIC), 2017)

If the Engineer's instruction is either (a) or (b) then the Contractor is required to submit quotations from the Contractor's suppliers and/or subcontractors to the Engineer; subsequent to which the Engineer may respond by either accepting the quotation or revoking the instruction given in the first place.

Failure by the Engineer to give such notice to the Contractor within 7 days of receipt of the quotation gives the Contractor the right to accept any of these quotations at the Contractor's discretion.

12.10.2.41 Sign and promptly return to the Contractor the daywork schedule (Sub-Clause 13.5)

This obligation only applies if a daywork schedule is included in the contract. 'Daywork Schedule' is defined in sub-clause 1.1.26 as: "*the document entitled daywork schedule (if any) included in the Contract, showing the amounts and manner of payments to be made to the Contractor for labour, materials and equipment used for daywork under Sub-Clause 13.5…*". The Guidance Notes to the FIDIC Red Book indicate that the daywork schedule may be necessary to cover minor work at cost.

The contract is clear in sub-clause 13.5 [Daywork] that for work of a minor or incidental nature the Engineer may instruct that such work may be executed under a variation on a daywork basis, with the work being valued in accordance with the daywork schedule. Importantly (and unless otherwise stated in the daywork schedule), the daywork schedule rates and prices include for taxes, overheads and profits.

The Contractor is obliged to deliver accurate copies of the daywork schedule to the Engineer, which includes records (as stated in sub-clause 6.10 [Contractor's Records]) of all the resources used in the execution of the previous days' dayworks. In return, the Engineer is obliged to promptly sign and return one schedule, if found to be correct and agreed.

Failure by the Engineer to promptly agree (or proceed with the determination under sub-clause 3.7 [Agreement or Determination] if not agreed) the daywork schedule has the result that the Engineer's ability to determine the correctness of the daywork schedule diminishes, as the Engineer would have to rely on its own records of what resources were on site and what the specific resources were occupied for any specific day (if not approved promptly). This could lead to the Engineer not being able to pick up on errors on such schedules, or alternatively would have to do determinations with insufficient information. Whatever the case may be, the likelihood is that the Contractor would be able to give notice of a dispute to the DAAB under sub-clause 21.4 [Obtaining a DAAB's Decision]. Glover & Hughes (2018) state that this was the case in *JDM Accord Ltd v Secretary of State for the Environment , Foot and Rural Affairs [2004] EWHC 2 (TCC)*, where the Employer (by extension the Engineer) failed to verify the daily daywork

schedule and the courts ruled that the onus was on the Employer to prove the timesheets were inaccurate.

12.10.2.42 Agree or determine the resources related to daywork (Sub-Clause 13.5)

Refer to 12.10.2.41 above.

12.10.2.43 Instruct a variation (Sub-Clause 13.6 (ii))

Glover & Hughes (2018) provide a summary of this sub-clause 13.6 [Adjustment for changes in laws] by stating that "*where there is a change in the law of the country which affects the performance of the Contractor, the Contract Price shall be adjusted.*" This could be the changes of labour legislation, changes in taxes, trade embargoes or even sanctions. Should the Contractor consider that it suffers as a result of the change in laws the Contractor is required to notify the Engineer within 28 days under sub-clause 20.2 [Claims for payment and/or EOT], whereas if the Employer is also required to submit the same under that clause for any decrease in cost as a result of a change in laws.

Should the change in laws result in the execution of the works being adjusted, then the Contractor may promptly give notice to the Engineer or the Engineer may promptly give notice to the Contractor; after which the Engineer instructs a variation either under sub-clause 13.3.1 [Variation by Instruction] or requests a proposal for a variation under sub-clause 13.3.2 [Variation by Request for Proposal].

The Engineer is obliged to act under sub-clause 13.6 [Adjustments for Changes in Laws] for the contract to be varied in line with the change in laws. If the Engineer fails in this obligation the Contractor may ordinarily refer the matter as a dispute to the DAAB under sub-clause 21.4 [Obtaining a DAAB's Decision].

12.10.2.44 Use a provisional index for the adjustment of rates until a current cost index is available (Sub-Clause 13.7)

Sub-clause 13.7 [Adjustments for Changes in Costs] is applicable only when indices of indexation are included in the contract. The Guidance notes to the FIDIC Red Book advise that "*if the amounts due to the Contractor are to be adjusted for rises or falls in the cost of labour, Goods and other inputs to the Works, for this Sub-Clause to apply it is important that a Schedule…of cost indexation is…included in the Contract and that such Schedule(s) include a formula or formulae for calculation of the applicable adjustment*

under this Sub-Clause." The Guidance Notes further indicate an example formula for inclusion.

As a result of the way the indices are typically calculated, that is by way of determining the current cost of labour, goods, materials and others and issuing such indexes in the following index, the current index will therefor ordinarily include for a forecast of what the likely current index ought to be. The Engineer is obliged to make use of such preliminary cost index and make the necessary adjustment once the final index for the particular month is issued.

Should the Engineer fail to make such adjustment and delay the adjustments until such time as the final index for the period in question be issued, the Contractor may ordinarily claim for cost under sub-clause 20.2 [Claims for payment and/or EOT].

12.10.2.45 Issue the advance payment certificate within 14 days (Sub-Clause 14.2.2)

Sub-clause 14.2 [Advance Payment] is only applicable if advance payment is included in the contract.

An advance payment provision is made for in most international standard form contracts (Greenhalgh, 2017) with the FIDIC Red Book 2017 being no different. The purpose of the advance payment is typically to assist the Contractor with its mobilisation and set-up costs (Greenhalgh, 2017), but could also be for the purchasing of goods and materials cannot yet be delivered to site and the rights to which cannot yet be transferred to the Employer (Segal, 2018). The guarantee is typically provided by a bank or financial institution and is paid back after a certain period over time typically in equal increments as the work progresses (Greenhalgh, 2017). Should the Contractor default or if the contract is terminated the bank or financial institution pays the balance remaining on the guarantee to the Employer (Cartlidge, 2015), (Mason, 2016), (O'Connor, 2017).

As so described under 6.2.1.9 the Employer consents to the entity providing the advance payment guarantee, which guarantee is provided as a sample in the Guidance Notes.

The certification of an advance shall only take place on receipt of an advance payment guarantee in terms of clause 14.2 [Advance Payment], with the requirement being that the Contractor keep the guarantee valid and enforceable until the advance is repaid. Sub-clause 14.2.3 states that the amount of the guarantee reduces by the amount (as percentages) the Contractor repays, which is the recoupment certified by the Engineer.

The onus is on the Engineer to certify the recoupments, with the terms being that if no such recoupment is certified before the taking over certificate, termination (under clause 15 [Termination by Employer] or 16 [Suspension and Termination by Contractor]) then the whole of the balance becomes due and payable to the Employer. What is of interest is that the advance payment is certified in its own free-standing payment certificate, as the requirement under sub-clause 14.7.1 is for the payment of such advance to be done within 21 days of receipt of the advance payment guarantee.

The Contractor may claim for additional cost under sub-clause 20.2 [Claims for payment and/or EOT] if the Engineer fails to certify such payment against the advance payment guarantee received, as the Contractor may have to take out loans for the initial costs which the advance payment is purposed for.

12.10.2.46 Agree or determine each amount to be added for payment of plant and materials (Sub-Clause 14.5)

Sub-clause 14.5 [Plant and Materials intended for the Works] is only applicable if payment of plant and/or materials when shipped and/or delivered to site is included in the contract.

Under sub-clause 14.3 [Application for Interim Payment] (v) the Contractor is required to submit as part of its interim payment certificate application the amounts to be added or deducted for the plant and materials under the rights of sub-clause 14.5 [Plant Materials Intended for the Works]. The Contractor has two obligations in the application; firstly, the amount claimed for plant and materials which have been shipped to or delivered to the site (ready for incorporation in the permanent works) and secondly the amount to be deducted as a result of the inclusion of such plant and materials in the permanent works. According to Glover & Hughes (2018) the onus then rests on the Engineer to determine any number of the following under sub-clause 3.7 [Agreement or Determination]: the Contractors records are satisfactory, the Contractor has in fact submitted evidence that the plant and material in question comply with the contract and lastly whether an undertaking is in place by the Contractor to provide a surety similar to an advance payment guarantee.

If the Contractor is compliant with all of the requirements under this sub-clause 14.5 [Plant and Materials intended for the Works] and the Engineer fails in its obligation to agree or determine the amount and include the same in the payment certificate issued for payment, the Contractor may claim for additional cost under sub-clause 20.2 [Claims For

Payment and/or EOT] as a result of carrying such cost without being compensated for the same.

Refer to 6.2.2.6 to 6.2.2.10 for the results of non-compliance by the Engineer to act on its obligation to agree or determine under sub-clause 3.7 [The Engineer].

12.10.2.47 Notify the Contractor of disagreement of any part of the final statement (Sub-Clause 14.11.1)

Under sub-clause 14.11 [Final Statement] the Contractor is required to submit the draft final statement within 56 days after taking receipt of the performance certificate, which final statement may not be delayed as a result of any ongoing DAAB or Arbitration proceedings.

Glover & Hughes (2018) indicate that the draft final statement is to show the value of the work done as well as any amount the Contractor considers it may be due. Should the Engineer not agree with the breakdown shown in the draft final statement, it is obliged to give notice to the Contractor, with the Contractor having to submit any additional information the Engineer may require. The Contractor and the Engineer are required to enter discussions to attempt to agree the matter, however if not resolved the matter will be agreed or determined under sub-clauses 3.7 [Agreement or Determination] and 20.2 [Claims for Payment and/or EOT].

The final statement is issued by the Contractor once everything is agreed.

Failure by the Engineer to give notice to the Contractor of its disagreement with the draft final statement would presumably mean that the Contractor has the right to issue the final statement (which would possibly bind the Employer to such amount not due to the Contractor under the contract) under sub-clause 14.11.2 [Agreed final statement]: "*If there are no amounts under Sub-Clause 14.11.1 [Draft Final Statement], the Contractor shall then prepare and submit to the Engineer the final statement as agreed…*" What is uncertain under this provision is that the Engineer and the Contractor would have needed to agree, however the Engineer's failure to disagree may by implication meant that it agrees.