

**Technical Note: FIDIC 2017: Clause 8 – Programming; Delay Analysis and Concurrency of Delay – with particular reference to the construction industry in the UAE.**

**Introduction**

1. This note is based on the terms of the FIDIC Yellow Book (Conditions of Contract for Plant & Design Build) 2017 edition, with a focus on the following provisions:
  - i. Clause 8.3 [Programme], and particularly, the extensive programme provision changes in the 2017 edition;
  - ii. Clause 8.5 [Extension of Time for Completion], and particularly, how the assessment of *concurrent* delay events is addressed in the 2017 edition; and
  - iii. Sub-Clause 20.2.4 [Fully detailed Claim] as to which form of delay analysis methods should be used for an extension of time (EOT) claim.
2. It is clarified that this note does not seek to address:
  - i. Clause 8.5 in terms of (i) the EOT regime, and (ii) risk sharing and the grounds for an extension of time (EOT); and
  - ii. Sub-Clause 20.2.4 in terms of the process and the requirements for the preparation of a detailed claim.
3. A central proposition advanced in this note is that the 2017 changes to Clause 8.3 have potentially created several adverse consequences for users, particularly when it is understood that the general conditions of a contract will be one volume in a multi-volume contract set – with now, the real potential for conflicts and inconsistencies to arise.
4. A further proposition advanced in this note is that the prescription of the format and content of contract programmes, is the skill set of project controls experts and should better be left to the text that they might draft and include in the Employer's Requirements. Describing programme requirements in the general conditions will likely

have a very limiting effect on what might be additionally drafted on the topic of the programme in other technical sections of the contract.

### **The FIDIC 2017 changes concerning programme contents in Clause 8.3 and addressing concurrent delays in Clause 8.5**

5. The changes made to the programme contents section of Clause 8.3 are shown in underlined texts below:

#### **Clause 8.3 Programme**

*The Contractor shall submit an initial programme for the execution of the Works to the Engineer within 28 days after receiving the Notice under Sub-Clause 8.1 [Commencement of Works]. This programme shall be prepared using programming software stated in the Employer's Requirements (if not stated, the programming software acceptable to the Engineer). The Contractor shall also submit a revised programme which accurately reflects the actual progress of the Works, whenever any programme ceases to reflect actual progress or is otherwise inconsistent with the Contractor's obligations.*

*The initial programme and each revised programme shall be submitted to the Engineer in one paper copy, one electronic copy and additional paper copies (if any) as stated in the Contract Data, and shall include:*

- (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, 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 intends to adopt in the execution of the Works;*
- (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 change(s) 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.*

6. These changes are extensive and delve into a range of programme content and requirements not previously addressed in the FIDIC suite of contracts. In line with these changes, the following new definitions are introduced:

*1.1.38 "Extension of Time" or "EOT" means an extension of the Time for Completion under Sub-Clause 8.5 [Extension of Time for Completion].*

*1.1.55 "No-objection" means that the Engineer has no objection to the Contractor's Documents, or other documents submitted by the Contractor under these Conditions, and such Contractor's Documents or other documents may be used for the Works.*

*1.1.67 "Programme" means 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].*

*1.1.71 "Review" means examination and consideration by the Engineer of a Contractor's submission in order to assess whether (and to what extent) it complies with the Contract and/or with the Contractor's obligations under or in connection with the Contract.*

7. Further, as the FIDIC format places EOT claims in Clause 20, that clause is also amended as follows:

#### **20.2.4 Fully detailed Claim**

*In this Sub-Clause 20.2, "fully detailed Claim" means a submission which includes:*

- (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).*

8. Finally, for the first time, the concept of *concurrent delay* was brought into the FIDIC general conditions in the form of a provision in Clause 8.5, as follows:

#### **Clause 8.5 Extension of Time for Completion**

...

*If a delay caused by a matter which is the Employer's responsibility is **concurrent** with a delay caused by a matter which is the Contractor's responsibility, the Contractor's entitlement to EOT shall be assessed in accordance with the rules and procedures stated in the Special Provisions (if not stated, as appropriate taking due regard of all relevant circumstances). (emphasis added)*

### **How were these changes received in the market?**

7. There has been an extensive commentary on the 2017 amendments. Many commentators focused their analyses on the new programming provisions in Clause 8.3 and the related provisions of Clause 8.5 (Concurrency) and Clause 20 (Claims).
8. One particular contribution was a paper by Messrs Bdaiwi and Skaik titled: *“Suitability of the new extension of time procedures under FIDIC 2017 Red Book”*. (Const. L.J. 2019, 35(6), 366-383).
9. This paper is based on a survey of construction industry participants in the UAE. The survey puts into context why programming provisions are seen as one of, if not *the most* important sections of a construction contract.
10. The survey reported that, within the basket of time-related issues, were sub-issues concerning: (i) proof of causation (of delay) to the relevant construction activities; (ii) delay analysis method(s) used to document or establish delay; and (iii) almost universally, issues of concurrency and overlapping delay events.
11. One comment from the survey captured how the market sees these issues:

*EOT claims are ranked as one of the highest causes of disputes in the construction industry. The source of such disputes was attributed to concurrent delay, ownership of total float, delay analysis method, and establishment of the EOT contractual ground.*

### **Where should these programme content requirements sit in a FIDIC style contract for a major project?**

12. The starting point to answer this question is to first understand the general structure of a contract for a major project and the positioning of the general conditions in that arrangement.
13. There is no fixed rule as to what order the various volumes of a construction contract should follow. Broadly, the volumes need to address the topics of commercial, technical and legal (in the sense of conditions of contract).
14. For a recent major transport-related project in the Middle East, the order of the contract volumes in a FIDIC based contract, was as follows:

*Vol 1: Formal Instrument of Agreement*

*Vol 2: Commercial (pricing; bills of quantities; provisional sums; cost escalation)*

**Vol 3: General Conditions of Contract**

*Vol 4: Employer's Requirements - General*

*Vol 5: Employer's Requirements – Particular*

*Vol 6: Employer's Requirements – Design Specifications*

*Vol 7: Employer's Requirements – Materials & Workmanship Specifications*

*Vol 8: Employer's Requirements – Tender Drawings*

*Vol 9: Employer's Requirements – Employer's Investigations*

*Vol 10: Employer's Requirements – Employer's Programme Plans*

*Vol 11: Extracts of Contractor's Technical Proposal*

15. As will be discussed further below, in volume 4 in this particular contract (and commonly in the equivalent technical sections in all major construction contracts), there were extensive provisions dealing with project controls and programme matters. Therefore, the first issue that arises from a situation whereby both the general conditions and other sections of the composite contract (Employer's Requirements) contain programming provisions: Is there a risk of potential *conflict*?
16. It is a rule of drafting that a topic should be addressed only once and in one location in the contract set. Annexure A to this note is an example set of project controls and programme requirements which formed part of a recent set of Employer's Requirements on a major ME project.
17. You will see there, that the provisions are both detailed and extensive, in this example running to 4 pages. The provisions are not only highly technical and drafted by experts in scheduling and project controls, but also more prescriptive than what appears in Clause 8.3 of the 2017 FIDIC contract. It should be noted that Annexure A is provided merely as an example of what a reasonably detailed project controls section might look like in an Employer's Requirements section.
18. Against this background, Clause 1.5 (Priority of Documents) provides that:

*The documents forming the Contract are to be taken as mutually explanatory of one another. If there is any conflict, ambiguity or discrepancy, the priority of the documents shall be in accordance with the following sequence:*

- (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 Employer's Requirements;***
- (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 a Party finds an ambiguity or discrepancy in the documents, that Party shall promptly give a Notice to the Engineer, describing the ambiguity or discrepancy. After receiving such Notice, or if the Engineer finds an ambiguity or discrepancy in the documents, the Engineer shall issue the necessary clarification or instruction. (emphasis added)*

19. Leaving aside for the moment the variety of documents listed in Clause 1.5, the relevant point on the issue of potential conflicts is that the General Conditions rank above the Employer's Requirements.

Accordingly, where both sections of the composite contract address the same topic (i.e., the requirements of programme submissions) and one is far *less* prescriptive than the other – which governs? And to what extent will the terms of Clause 8.3 override “similar” programme provisions in subsequent sections of the contract?

20. For these reasons and from the further comments below, one submission from this note is that it is better contract drafting practice to consolidate all technical and programme requirements in one location in the contract. And the best location is in the Employer's Requirements, rather than the General Conditions of contract.

### **What programmes should an Employer expect from the Contractor, such as to be made requirements in contract?**

21. There are several occasions where an Employer may wish to dictate the requirements for programmes, and programming information, to be submitted by the contractor:

- i. **The Initial programme:** whether it be the 28-day programme in paragraph 1 of Clause 8.3, or at some other date, the Employer is entitled to be prescriptive as to the format and contents of this initial contract programme. The initial programme must be in a format and level of detail so as to be the precedent for all subsequent programmes.

On a separate note, there are strong reasons to seek to have the initial or base programme agreed upon and settled at the time of contract award. It can be problematic on a project if agreeing on the baseline programme is left to after the contract award, with the inherent risk that time will drag on and the programme

(or sections of it) is not agreed on for months. On any major project, there will be sufficient time in the final stages of the procurement process to agree on a programme if an effort is put into it.

- ii. **Revised Programme:** the requirement for the Contractor to submit a revised programme can arise in several ways under the FIDIC form of contract. For example, paragraph 1 of Clause 8.3 provides that the Contractor shall submit a revised programme if the programme ceases to reflect actual progress or is inconsistent with the Contractor's obligations. Similarly, the last paragraph of Clause 8.3 provides that if the Engineer gives notice that the current programme fails to comply with the Contract or ceases to reflect actual progress, or is inconsistent with the Contractor's obligations, the Contractor shall submit a revised programme within 14 days after receiving the notice.
  - iii. **Programme updates:** a good practice is to require monthly programme updates, being a standing topic for monthly progress review meetings. Further, although not so stated in FIDIC, where the scheme of payments is based on milestones and hence not a payment every month, it is not uncommon to require updated programmes with a payment claim.
22. These circumstances would be the minimum and it would be prudent for an Employer to reserve to the Engineer the power to require revised baseline programmes, which should include revised logic, and the required updated programmes from time to time and when deemed necessary by the Engineer for the benefit of the overall project. For example, the Employer might be about to initiate a provisional sum/nominated subcontract programme and wishes to inform the subcontract bidding community of the current status of the works - hence an updated programme might be requested from the Contractor.

#### **Whether Clause 20.2.4 mandates a specific form of delay analysis for an EOT claim?**

23. The approach in FIDIC 2017 Clause 20.2.4 to provide a "*fully detailed claim*" does not go so far as to mandate that the Contractor provide any particular form of delay analysis with an EOT claim.

24. Several commentaries also suggest that there might be some advantage in specifying in the contract the form of delay analysis to be used for EOT claims. The better view is that it is *not* best practice to mandate a particular form of delay analysis in the contract, for reasons which include:
- i. The nature of the project i.e, whether it is a vertical structure project (e.g. a building) – or a linear-type project (where the construction programme and planning are based on production rates and resource analysis and allocation) or a mixture of both types. In vertical-type projects, the logic and sequence of activities are central to the project programme (i.e. erecting walls before the installation of beams and ceilings);
  - ii. The timing of the analysis compared to the time when the relevant delay event(s) eventuate i.e., whether the analysis is conducted *prospectively* or *retrospectively* – for example, for time and cost assessment of a variation during the course of the project, a prospective method can be appropriate. Where analysis needs to be carried out after completion of a delay event, a retrospective type of analysis (and mainly by reference to facts) is more appropriate;
  - iii. The audience for which the analysis needs to be conducted. For example, an analysis for a high-level negotiation does not necessarily fit other types of ADR forums such as arbitration. The form of analysis needs to be appropriate for the forum;
  - iv. information and time available; and
  - v. some analyses are quick and inexpensive; whereas some types of analyses are time-consuming and expensive. The type of analysis carried out should be proportionate to the value of the claim and the time available.
25. Currently in the construction projects market - and specifically in the Middle East - the *Time Impact Analysis* method is a popular stipulation with Employers. In the UAE survey, 67% of respondents said that they favoured this method as the one they most frequently used.



26. The Bdaiwi and Skaik survey provides:

*(a) Impact analysis method*

*The second issue that was examined by the survey was the impact analysis method. Given the answers and the importance of this issue as a cause of EOT disputes about entitlement, such examination would be significant and necessary. In this context, two questions were asked to the professional as follows:*

- (1) "From your experience, what was the most frequently used delay analysis method that was found acceptable by all project parties?"*
- (2) "Which delay analysis method would you recommend?"*

*About 67 per cent of the respondents have chosen the Time Impact Analysis method to be the one they most frequently use and find acceptable by the different contract parties.*

27. In their paper, Messrs Bdaiwi and Shaik also noted:

*(a) Delay analysis method*

*Each delay analysis method usually leads to a different final result pertaining to the total impact of the delay event being evaluated.*

*Therefore, in the case of absence of a particular contract provision mandating the use of a specific delay analysis method, this area could be of significant potential for EOT entitlement dispute between the contract parties.*

*However, both SCL (Society for Construction Law) protocol and ACEI RP R29-03 provide guidelines upon which certain method will be recommended to be used over the other.*

*In order to achieve this, both standards classified the impact methods based on timing by which the analysis will be carried into two types.*

*The first is the prospective analysis in which the impact of the event is analysed in the expected future context, and the second is the retrospective analysis in which the analysis is more of a forensic nature that considers the actual known effect of the impact.*

*All the processes of delay analysis should be carried out using scheduling software that utilises the critical path method.*

28. Respectfully, the author of this paper has different views as to both the mandating of a form of delay analysis in a contract and the proposition that delay analysis must be carried out using scheduling software. A delay analysis must make sense and be based on a factual analysis of the relevant events. Mandating the use of planning software could produce thousands of activities, and over hundreds of pages when a simple, and robust analysis would be sufficient.

It should be noted that the Society of Construction Law Delay and Disruption Protocol (2<sup>nd</sup>ed, February 2017) ([www.scl.org.uk](http://www.scl.org.uk)) chapter 11, paragraph 11.5, provides a list of common delay analysis methodologies, without any one method being singled out as appropriate in all cases, viz:

Method of Analysis	Analysis Type	Critical Path Determined	Delay Impact Determined	Requires
Impacted As-Planned Analysis	Cause & Effect	Prospectively	Prospectively	<ul style="list-style-type: none"> <li>Logic linked baseline programme.</li> <li>A selection of delay events to be modelled.</li> </ul>
Time Impact Analysis	Cause & Effect	Contemporaneously	Prospectively	<ul style="list-style-type: none"> <li>Logic linked baseline programme.</li> <li>Update programmes or progress information with which to update the baseline programme.</li> <li>A selection of delay events to be modelled.</li> </ul>
Time Slice Windows Analysis	Effect & Cause	Contemporaneously	Retrospectively	<ul style="list-style-type: none"> <li>Logic linked baseline programme.</li> <li>Update programmes or progress information with which to update the baseline programme.</li> </ul>
As-Planned versus As-Built Windows Analysis	Effect & Cause	Contemporaneously	Retrospectively	<ul style="list-style-type: none"> <li>Baseline programme.</li> <li>As-built data.</li> </ul>
Retrospective Longest Path Analysis	Effect & Cause	Retrospectively	Retrospectively	<ul style="list-style-type: none"> <li>Baseline Programme.</li> <li>As-built programme.</li> </ul>
Collapsed As-Built Analysis	Cause & Effect	Retrospectively	Retrospectively	<ul style="list-style-type: none"> <li>Logic linked as-built programme.</li> <li>A selection of delay events to be modelled.</li> </ul>

- i. Each of these methods can apply to a particular event or delay, or even a combination of them. For example, some projects that are linear or *resource-driven* do *not* lend themselves to critical path analysis. Further, prospective methods such as *Time Impact Analysis*, to have value, requires EOTs to be assessed contemporaneously with the event during the course of the project. Further limitations of the Time Impact Analysis method include:
- a. It relies heavily on the programme – which in almost all cases will be subject to corrections and adjustments;
  - b. it produces a hypothetical result; and
  - c. it can cause issues where the assessment of EOT claims is left to the end of the project. Unfortunately, in reality, the “*wait and see*” approach is more common than not, such that to have mandated a *Time Impact Analysis* (or indeed any other method) in the contract can itself cause disputes as to the ability to use other methods once the works are complete.
29. Probably the best and most recent analysis of the competing virtues of the prospective “*Time Impact Analysis*” vs the retrospective “*As-Planned versus As-Built*” analysis is set out in detail in the the recent case of Victorian Supreme Court in *V601 Developments Pty Ltd v Probuild Constructions (Aust) Pty Ltd [2021] VSC 849* (decided on 22 December 2021).
30. In summary the court made the following observations:
- A) The contract baseline programme was in PDF, with only 350 activities and out-of-date when the work commenced***
- (a) [Contractor’s expert] used WUCP01 as a ‘baseline program’ and developed the ‘as-planned’ program. [Contractor’s expert] also commenced his analysis by using the WUCP01 program and other information, which he identifies, to locate the critical path of his ‘as-built’ analysis of delay, in relation to which [Contractor’s expert] analyses [Contractor]’s time extension claims.
  - (b) The [Contractor’s] expert evidence was accepted that the Appendix 5A Contract program was unsuitable as a tool to assess delay in relation to the project for reasons including:

*As there were no further programmes approved, it is my view that by the time the WUC started, the Approved Contractor's Program in Appendix 5A of the Contract no longer reflected the plan to Completion of each Separable Portion. The Appendix 5A programme was out of date when the WUC works commenced, and to produce any sensible analysis this programme would have had to have been updated to reflect the actual start of the works on site. The Appendix 5A programme does not show the level of detail that would be necessary for a forensic analysis [being in PDF format and limited to 350 activities.]*

***B) Prospective (Time Impact) vs retrospective analyses – which is more appropriate?***

(c) Additionally, [Employer's expert] analysis utilising a Time Impact Analysis is itself a theoretical analysis. For example, as pointed out by [Contractor's expert], [Employer's expert] analysis incorporates predictions about the works to be undertaken and how the delay will impact those works. This criticism by [Contractor's expert] was, in substance, accepted by [Employer's expert] in his evidence that the methodology which he, [Employer's expert], had applied, produced only a 'forecast outcome'.

(d) In the *Society of Construction Law Delay Disruption Protocol* (2<sup>nd</sup> ed, 2017) at 11.6(b), the learned authors state that:

The product of this method of analysis [*i.e.*, *Time Impact*] is a conclusion as to the likely delay of the modelled delay events on the programme/critical path that is most reflective of the contemporaneous position when the delay events arose. This method does not capture the eventual actual delay caused by the delay events as subsequent progress is not considered.

(e) An *As Planned v As-Built* analysis, '*is more appropriate to determine the actual extent of delay as opposed to a theoretical calculation of critical delay, especially as the facts of the case are now known.*'

***C) A retrospective analysis applies common sense and a practical approach to the location of the critical path***

(f) It has not been necessary to list hundreds of individual activities in a sequence which have no bearing on [Contractor's expert]'s analysis, nor where the critical path is located or the extended delay. [Contractor's expert] has

explained how he reaches conclusions on the location of the relevant critical path and has identified the activities delayed in each sequence.

(g) The retrospective delay analysis applies common sense and a practical approach to the location of the critical path;

(i) The Time Impact Analysis used by [Employer's expert] is a prospective method of analysis that can only be utilised to forecast a theoretical likely delay to the completion of works, which was created time distant from the actual completion of the project.

(ii) Given the timing of the dispute between the parties, and that the actual facts are known in relation to the project, a retrospective assessment of the actual critical delay that arose during the course of the works is more appropriate; and given that the facts for the delays have actually been established, a retrospective method of analysis that establishes what has happened is a more practical approach.

*(emphasis added)*

***D) The longer it takes to assess delay after the delaying events occur, the more support there is for a retrospective form of delay analysis.***

(h) The Society of Construction Law Delay and Disruption Protocol (2<sup>nd</sup> ed, 2017) – (the “Protocol”) states:

Delay impact is determined in one of two different ways. A prospective analysis identifies the likely impact of historical progress or delay events on a completion date. The conclusions of a prospective delay analysis may not match the as-built programme because the Contractor's actual performance may well have been influenced by the effects of attempted acceleration, re-sequencing or redeployment of resources in order to try to avoid liability for liquidated damages or due to other Employer and Contractor Risk events. A retrospective delay analysis identifies the actual impact of the delay events on the identified actual or as-built critical path. *(emphasis added)*

(i) The Protocol supports the [Contractor's] expert's opinion and approach. The analysis is now time distant from the event, so reliance on a prospective method is inferior compared to a retrospective method such as the *As Planned v As-Built* windows method.

- (j) The *As-Planned v As-Built* method is based on the actual start and finish dates, compared to the relevant planned dates. This is [Contractor's expert]'s reason for relying on the retrospective method as his primary method of analysis. Prospective analyses cannot and do not measure actual critical delay. (*emphasis added*)
- (k) It is more practical and more accurate and sensible to analyze delay and the effect of delay retrospectively, with the benefit of hindsight, and the higher level of assurance now achievable from a retrospective delay analysis utilising the 'as build' facts to ascertain how the WUC was actually constructed and actually delayed.
- (l) The reasons for the above conclusions are principally:
- (i) A *prospective* delay assessment is a theoretical forecast of what will transpire on the Project, without regard to what would actually happen during the course of the Works.
  - (ii) A *prospective assessment* is inferior to an assessment of delay undertaken when the facts affecting the progress of the project are known and the actual delay can be assessed.<sup>489</sup> Parties and experts do not need to rely upon a theoretical delay model when the actual delay to the relevant construction activities can be established.
  - (iii) No native copy of the Approved Contractor's Programs existed at the time of the majority of relevant delaying events, nor were there native copies of contemporaneous construction programs at those times. Therefore, non- contemporaneous programs have been created to undertake [Employer's expert] prospective analysis.
  - (iv) [Contractor's expert]'s retrospective method of analysis *does not* require the creation of programs to make assessments and is therefore more appropriate and practical in the assessment of delay events.

- (v) The retrospective assessment of delay is consistent with the Contract because it establishes the critical delay to the activity or sequence of activities at the time of the delaying event.
- (vi) Absent a contemporaneous or Approved Contractor's Program, the retrospective assessment of delay is the most practical and reliable method of analyzing the actual delay to the work referenced back to the appropriate baseline to measure delay.
- (vii) The retrospective delay analysis applies common sense and a practical approach to the location of the critical path, with reference to contemporaneous project records and the measurement of delay.
- (viii) The Time Impact Analysis used by [Employer's expert] is a prospective method of analysis that can only be utilised to forecast a theoretical likely delay to the completion of works, which was created time distant from the actual completion of the project.
- (ix) In relation to the Time Impact Analysis methodology, the Society of Construction Law Delay and Disruption Protocol (2<sup>nd</sup> ed) notes:

The product of this method of analysis is a conclusion as to the likely delay of the modelled delay events on the programme/critical path that is most reflective of the contemporaneous position when the delay events arose. This method does not capture the eventual actual delay caused by the delay events as subsequent progress is not considered.
- (x) The Protocol also states:

Delay impact is determined in one of two different ways. A prospective analysis identifies the likely impact of historical progress or delay events on a completion date. The conclusions of a prospective delay analysis may not match the as-built programme because the Contractor's actual performance may well have been influenced by the effects of attempted acceleration, re-sequencing or redeployment of resources in order to try to avoid liability for liquidated damages or due to other Employer and Contractor Risk events. A retrospective delay analysis identifies the actual impact of the delay events on the identified actual or as-built critical path. (*emphasis added*)

- (xi) The Protocol supports [Contractor’s expert]’s opinion and approach. The analysis is now time distant from the event, so reliance on a prospective method is inferior compared to a retrospective method such as the *As-Planned v As-Built* windows method.
- (xii) The *As-Planned v As-Built* method is based on the actual start and finish dates, compared to the relevant planned dates. This is [Contractor’s expert]’s reason for relying on the retrospective method as his primary method of analysis. Prospective analyses cannot and *do not measure actual critical delay*.

### Concurrent Delay

31. Concurrent delay is a complex topic and one that has been the subject of many articles and court cases in jurisdictions around the world. A recent summary of the state of the international debate was published by CMS Law on 24 August 2020 – “*CMS Expert Guide to the law and regulation of concurrent delay*”. The summation across eighteen countries, documents the difficulty that every jurisdiction has in wrestling with complex issues of delay causation and risk allocation in situations where the contract is silent on the topic of concurrency.
32. Some examples of the lack of certainty and the approaches by the courts are noted as:

#### **Australia**

*The current Australian authorities favour the “first in time” approach, with the effect that delays are not taken to be concurrent where the contractor risk event arises first, causes actual delay to the contractor and concludes after the effects of the qualifying event have ceased. Nevertheless, the Australian courts may not follow that approach in future cases, depending on the express contractual terms, how the contract defines concurrent delay (if at all) and the factual matrix. There is no relevant legislation.*

.....

*Notably, the recent decision of Hammerschlag J in the NSW Supreme Court (White Constructions Pty Ltd v PBS Holdings Pty Ltd [2019] NSWSC 1166 at [191]) held that “the fact that a method appears in the [S C L] Protocol does not give it any standing, and the fact that a method, which is otherwise logical or rational, but does not appear in the Protocol, does not deny it standing.”*

*Hammerschlag J went on to say that “[t]he Court is concerned with common law notions of causation. The only appropriate method is to determine the matter by paying close attention to the facts, and assessing whether White has proved, on the probabilities, that delay in the underboring solution delayed the project as a whole and, if so, by how much”*

#### **England**

*The most recent court judgment (North Midland Building Ltd v Cyden Homes Ltd [2018] EWCA Civ 1744) suggests that the definition of concurrent delay most likely to be accepted by tribunals is:*



*“a period of project overrun which is caused by two or more effective causes of delay which are of approximately equal causative potency”.*

.....

*There are cases that suggest that (absent any contractual exclusion of entitlement) a contractor should generally be entitled to an extension of time for concurrent delay, but these cases are first instance decisions only and there are also other judgments that suggest (by virtue of taking a very narrow definition of concurrency) the contrary. As a result the comment in the [SCL] Protocol that “Where a Contractor Delay to Completion occurs or has an effect concurrently with Employer Delay to Completion, the Contractor’s concurrent delay should not reduce any EOT due” cannot be taken as representing the position under English law. (emphasis added)*

## UAE

33. For the same reason as in other civil law jurisdictions, there are few if any reported court cases that deal with EOTs and project delays, let alone concurrent delays. At best the position in civil law countries and the UAE has to be assessed on a first principles basis.
34. Before referring to the CMS study, it is worth noting that in the UAE survey by Messrs Bdaiwi & Skaik, on this topic, they found that:

*the respondents’ answers showed that 67 per cent of them believe that in the case of concurrency, the contractor should be entitled to the EOT without cost compensation whereas 19 per cent believed that the contractor should be entitled to both EOT and cost compensation and only 10 per cent believed that there is no contractor entitlement in case of concurrency if the contractor’s delay is more than the employer/consultant delay.*

35. In the CMS study, the observations included for the UAE, are as follows:

*Potential claims relating to concurrent delay are often argued on the basis of the general legal principles contained in Federal Law No. 5 of 1985 (the “Civil Code”). The Civil Code arguably provides courts and arbitral tribunals with a high degree of flexibility when determining liability for concurrency and is often used as a basis to promote an apportionment approach:*

- **Article 290 states:** “[i]t shall be permissible for the judge to reduce the level by which an act has to be made good or to order that it need not be made good if the person suffering harm participated by his own act in bringing about or aggravating the damage.”
- **Article 291 states:** “[i]f a number of persons are responsible for a harmful act, each of them shall be liable in proportion to his share in it, and the judge may make an order against them in equal shares or by way of joint or several liability.”

.....

*UAE law does not provide for any specific rules for evidence as to causes and/or periods of delay. In particular, there are no officially accepted types of delay analysis. Furthermore, if this issue is not dealt with by the contract then disputes as to the correct method often arise.*

*In such circumstances, each of the parties will usually present independent opinions issued by delay experts who will adopt their own preferred method of analysis.*

*In arbitration, the tribunal will generally determine which method of delay analysis (and consequently which expert opinion) it prefers. However, in disputes before the UAE courts, a court expert will generally be appointed who may choose to disregard any third party reports in favour of his/her own assessment.*

36. Against this background, the 2017 version of the FIDIC suite seeks to address the issue of concurrent delay by the new provision in Clause 8.5. viz;

*If a delay caused by a matter which is the Employer's responsibility is **concurrent** with a delay caused by a matter which is the Contractor's responsibility, the Contractor's entitlement to EOT shall be assessed in accordance with the rules and procedures stated in the Special Provisions (if not stated, as appropriate taking due regard of all relevant circumstances). (emphasis added)*

37. Again, and with respect to the drafting committee, this is a very poorly drafted contract clause.
38. First, many contract particulars are assigned to be drafted in Part B – Special Provisions, so there is no issue as to the use of the Special Provisions for this purpose as a principle.
39. The issue is rather the situation if the Special Provisions do not contain rules or procedures for assessing concurrent delay – the default is then the text “*(if not stated, as appropriate taking due regard of all relevant circumstances)*”. It might seem like a small point, but that cannot be the language of a contract. Further, it leaves hanging the fact that if the Special Provisions are blank on this topic, there is still it seems an offered up solution “*...as appropriate....*”.
40. Some commentators have suggested that the FIDIC drafting Committee was anticipating that the Special Provisions would refer to the SCL Protocol and that would be the solution.
41. It is not the scope of this note to analyse the SCL Protocol. It is a very detailed discussion paper with now the 2<sup>nd</sup> edition (2017) running to 80+ pages. It is not, however, suitable to be a contract document, and even if it was to be incorporated as the desired scheme for determining issues of concurrent delay, it does not do that.
42. Although a lengthy extract, the sections below from the Protocol show not only the complexity of the topic, but also (i) the qualifications in the Protocol regarding the common law “*prevention principle*”, (ii) the various levels of authority arising from common law court decisions, and (iii) the final suggestion of applying common sense – all good points but not the language of terms of a contract:

### The Protocol's extracts regarding concurrency

- 10.7 *From a legal perspective, there are two competing views as to whether an Employer Delay is an effective cause of Delay to Completion where it occurs after the commencement of the Contractor Delay to Completion but continues in parallel with the Contractor Delay. This can be illustrated by the following example: a Contractor Risk Event will result in five weeks Contractor Delay to Completion, delaying the contract completion date from 21 January to 25 February. Independently and a few weeks later, a variation is instructed on behalf of the Employer which, in the absence of the preceding Contractor Delay to Completion, would result in Employer Delay to Completion from 1 February to 14 February.*
- 10.8 *On one view, the two events are both effective causes of Delay to Completion for the two week period from 1 to 14 February because they each would have caused Delay to Completion in the absence of the other (with the subsequent delay from 15 February to 25 February caused by the Contractor Risk Event alone). This view may be supported by older English appeal court cases (no doubt predating critical path analysis) which provide that if the failure to complete the works is due in part to the fault of both the Employer and the Contractor, liquidated damages will not be payable. In a situation like the example described in paragraph 10.7 above, it can be argued that both the Employer Risk Event and the Contractor Risk Event are in part the cause of the Delay to Completion.*
- 10.9 *On the other view, the Employer Delay will not result in the works being completed later than would otherwise have been the case because the works were already going to be delayed by a greater period because of the Contractor Delay to Completion. Thus, the only effective cause of the Delay to Completion is the Contractor Risk Event. This is the consistent position taken in recent lower level English court decisions.*
- 10.10 *The Protocol recommends the latter of these two views, i.e. that where an EOT application relating to the situation referred to in paragraph 10.7 above is being assessed, the Employer Risk Event should be seen as not causing Delay to Completion (and therefore there is no concurrency). Concurrent delay only arises where the Employer Risk Event is shown to have caused Delay to Completion or, in other words, caused critical delay (i.e. it is on the longest path) to completion. The Protocol cautions that this recommendation would have to be re-considered were an appeal court to take a different approach to this issue.*
- 10.11 *In considering whether concurrent delay exists, the Protocol recommends a common sense approach to delay analysis. In particular, the Protocol recognises that delay analysis is rarely precise down to the day (or even few days). The application of common sense requires that the margin for imprecision should be taken into account in reaching a conclusion on concurrency.*
43. The various approaches to concurrent delay in the jurisdictions noted above, confirm that, on any particular project, the resolution of a claimed concurrent delay will involve an analysis of the detailed facts of the particular situation. Whether or not there is true concurrency or overlap, between the delay event being non-excusable for the contractor, but due to the employer, such as to open the door to a concurrent analysis, is entirely subjective i.e factual.
44. There are even some standard type contracts that set out how the issue of concurrency should be addressed. In the Australian standard forms, for example, the fifth paragraph of Clause 35.5 of AS 2124-1992 and similarly AS 4300-1995 states:

*Where more than one event causes concurrent delays and the cause of at least one of those events, but not all of them, is not a [relevant delay event] ... then to the extent that the delays are concurrent, the Contractor shall not be entitled to an extension of time for Practical Completion.*

Against this background and in the context of FIDIC 2017 Clause 8.5's provisions, it is suggested that it is best practice for the Employer and Contractor to agree expressly in the contract the methodology to be applied in identifying and assessing concurrent delays.

### **The three key issues in EOT claims and disputes in the UAE**

45. Summarising the key issues identified in the UAE survey that cause project disputes over EOT matters, Messrs Bdaiwi and Skaik's UAE survey, showed:

#### **The Main Causes of EOT Disputes**

Rank	Factor of EOT Disputes	% Percentage of Respondents
1	<i>Concurrent Delay</i>	39
2	<i>Establishing the Causation</i>	25
3	<i>Impact Analysis Method</i>	25
		= 89%

46. This paper sets out the view of the author in respect of items 1 – 3 above, as follows:

**Item 1 – ‘Concurrent Delay’** – it is the view of the author that a construction contract should seek to mandate how concurrent delays are to be addressed or assessed. The drafting committee for FIDIC 2017, anticipate this and make provision for the topic to be addressed in the Part B – Particular conditions.

**Item 2 – ‘Establishing the Causation’** – it is the view of the author that ‘Causation’ is a fact-based issue that needs to be addressed in a case-by-case situation. A very comprehensive recent analysis can be found at (2019) Const. L.J Issue 6, being “*How Causation should be Analysed in Construction Claims*” by Muhammad I Chaudhary.

**Item 3 – ‘Impact Analysis Method’** – it is the view of the author that delay analysis methodology should not be specified in the contract. Selecting the methodology can be driven by the nature of the delay event i.e., resource-driven or logic driven – the purpose of analysis – i.e., high-level negotiation or other ADR venues - the time the analysis is carried out – prospectively or retrospectively.

47. Further to the above author's views on the main causes of EOT disputes in the UAE, the author submits that the FIDIC 2017 amendments to the sections of Clause 8.3 that add a range of new provisions dictating the form of contractor's programme are to be approached with caution. In other words, it is a better practice to address the programme and project controls requirement in one location in the contract, and that place is the 'Employer's Requirements'.

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November, 2022

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**Annexure A:** Example Project Controls section of Employer's Requirements.

**SCL Protocol:** [www.scl.org.uk](http://www.scl.org.uk)

## **Annexure A**

Example of the detailed requirements of a Project Controls and Programmes section in the Employer's Requirements of a FIDIC-style contract.

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### **1. PLANNING, PROGRAMMING AND PROGRESS MANAGEMENT**

#### **1.1 Project Management**

1.1.1 The Contractor shall provide effective project management of all Contract activities for the work under the Contract. It is a prime responsibility of the Contractor to manage the work under the Contract to achieve the requirements of the Contract, meeting all the time requirements without delays. The Contractor shall cooperate fully with the Engineer in coordination with all parties involved with the project, not only limited to the designer(s) of interfacing works, other Contractor(s), private developers and concerned local authorities.

#### **1.2 Software**

1.2.1 The Contractor shall implement and use a computerised system to plan, execute and manage the design and construction of the work under the Contract throughout the work under the Contract.

1.2.2 Programme management software shall be in accordance with the Technical Information Management Plan included in Employer's Program Plans and shall provide data in formats completely compatible with the system used by the Engineer. The software shall be Primavera Project P6.

1.2.3 If required by the Engineer, five (5) copies of the software and relevant installation and operation manuals licensed for use in connection with the work under the Contract shall be provided free of charge to the Engineer and the Employer.

1.2.4 The Contractor shall comply with all protocols related to the access to and the security of the Employer's and Engineer's computer networks and intranet.

#### **1.3 Programmes**

1.3.1 The Contractor shall develop a detailed, logical method of executing the work under the Contract and shall provide programmes which shall reflect the detailed planning to be undertaken.

1.3.2 The Contractor shall comply with the work breakdown structure provided by the Engineer.

1.3.3 The programmes shall be realistic, achievable and shall fully reflect the Employer's Requirements and shall be accompanied by detailed supporting plans.

1.3.4 Programme activities shall be discrete items of work, which when combined, produce definable elements, components, leading to Milestones, Key Interface Dates and Sectional Completion dates and clearly identify the completion obligations of the Contractor.

- 1.3.5 Any programme activity creating an imposed time or other constraint shall be fully defined by the Contractor.
- 1.3.6 Activity descriptions shall clearly convey the nature and scope of the Works. Programmes shall take into account the activities of preceding, concurrent, adjacent, and follow on parts and Sections of the work under the Contract as well as utility service diversions, new utility installations and connections, and any other activity that may affect the progress of the work under the Contract.
- 1.3.7 Milestones, Key Interface Dates, Sectional Completions and Taking Over Dates shall be an integral part of all programmes and all activities. Sequencing and interrelationships required to achieve each of these dates shall be shown on the programme.
- 1.3.8 The programming shall not impose constraints which in any way affect the float or limit the achievement of Key Interface Dates, Sectional Completion or Taking Over.
- 1.3.9 The critical path shall be clearly identified in the programmes and fully described in the accompanying programme narrative.
- 1.3.10 The Contractor's prime point of contact for all matters relating to planning, programming and progress management shall be the Engineer.

#### **1.4 Programme Submissions**

- 1.4.1 All submissions of proposed programmes and schedules 28 days from the Commencement Date shall include the actual progress of work and forecast of work remaining. Actual progress shall be stated in terms of completed Milestones, Key Interface Dates, Sectional Completion and Taking Over (as defined in the Schedule of Payments) with the corresponding earned value; and percentage completions of activities commenced but between Milestones, Key Interface Dates, Sectional Completion and Taking Over; and remaining duration and actual start and finish dates for each activity in the work under the Contract.
- 1.4.2 If the Programme fails to comply with the Contract or to be consistent with actual progress, the Contractor shall amend the programme taking into account the Engineer's comments and/or requirements and resubmit the Programme within 14 days for review by the Engineer.

#### **1.5 Master Programme – First Submissions**

- 1.5.1 Within 28 days of the Commencement Date, the Contractor shall submit the initial 'Master Programme' for review by the Engineer. The detailed Master Programme shall be fully compliant with the key interface and Taking Over schedule and milestone time programme and shall provide full programme details for the first six (6) months of the Contract and outline details for the remaining period of the Contract.

- 1.5.2 Within 180 days of the Commencement Date, the Contractor shall submit to the Engineer for review a fully comprehensive Primavera Project P6 based, resource and cost loaded detailed 'Master Programme'. In identifying all construction, installation, fitting out, testing and commissioning activities and associated interfaces, it shall include:
- a) key plans showing the zones/location mentioned in the programme;
  - b) method statement narrative explaining contract components, areas, zones methodology, sequence of construction, logistics, temporary facilities, safety and security, traffic and utility diversions, planning, permits and licences, interface management with other construction packages, contractual milestones, imposed constraint dates and assumptions;
  - c) work breakdown structure (WBS) shall be in accordance with the Contract and for review by the Engineer;
  - d) activity coding system as defined by the Engineer;
  - e) cost accrual coding shall be defined by the Engineer;
  - f) level 2 programme showing design programme, construction sequence taking into consideration of all the interfaces with other contracts in the Project. This shall be used as a guideline for preparing the Contractor's detailed design and construction programme;
  - g) critical path of the work under the Contract;
  - h) planned progress S curve derived from budgeted cost loaded on to the schedule cumulative and monthly cashflows;
  - i) long lead items and forecasts of all Milestone dates, Key Interface Date, Sectional Completion dates and Taking Over dates; and
  - j) time chainage diagrams, using TILOS software, fully in compliance with the Master Programme.

## **1.6 Programme - Updates**

- 1.6.1 The detailed Master Programme shall be updated and submitted monthly by the Contractor, or as required by the Engineer and an electronic copy shall be provided to the Engineer accordingly.
- 1.6.2 The Contractor shall produce and submit a summary level report on the Master Programme for the Engineer's review. This report shall contain the following information as a minimum planning requirement:
- a) activity description planned and remaining duration;
  - b) planned and actual percentage progress, calculated from quantity of works completed;
  - c) baseline start and finish dates (original);
  - d) current early start and early finish dates;
  - e) forecast finish dates as on data dates;
  - f) actual start and actual finish dates;



- g) contractual and monitoring milestone dates and other key dates (original, plan and actual);
- h) long lead and critical material milestone dates;
- i) a programme for Authorities' Approvals;
- j) main interface dates;
- k) for all items covered under provisional sums and all variations or other items to be paid under schedules of rates: quantity to complete, actual quantity achieved and remaining quantity to be completed; and an 'S' curve showing actual and planned percentages of progress; and
- l) in submitting the detailed Master Programme and all updates to it, the Contractor shall ensure that it meets with the requirements of the Contract.

1.6.3 The Contractor shall fully cooperate with the Engineer in the review of the Contractor's programmes and schedules. It remains Contractor's responsibility to ensure that provisions such as information to be provided by the Engineer, are included and thereby incorporated into the programmes, sub-programmes and the work.

## **1.7 Sub Programmes below the Master Programme**

1.7.1 The Contractor shall also provide sub programmes completely consistent with, but at a more detailed level than, the Master Programme, including:

- a) design, procurement and manufacturing sub programme;
- b) construction and installation sub programme;
- c) fitting out sub programme; and
- d) testing and commissioning sub programme.

1.7.2 These sub-programmes shall be updated and issued to the Engineer monthly.

## **1.8 Supplementary Programmes List**

1.8.1 The Master Programme and sub programmes shall be supplemented by the following, in a format to be agreed with the Engineer:

- a) three (3) month rolling programme;
- b) five (5) week rolling programme; and
- c) time chainage and time location programme.

## **1.9 Effects on Programme of Delays and Change**

1.9.1 The Contractor shall report any potential or actual delays which may affect the overall completion to the Engineer in a timely manner and recommend suitable measures to overcome the identified issues.

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