Proving Cause and Effect – A Risk Management Process

1. This paper seeks to set out the need for developing and establishing a proper logical standard of proof for cause and effect and provides examples of some of the more effective standards implemented which are essential to not only ensuring the appropriate determination of disputes but also effectively encourages amicable resolutions.

2. Interestingly, the proper standard of proof can indirectly become a management tool to minimise or mitigate effects as well.

3. In considering the proper standards that ought to be and can be implemented in a project and, understood and utilised in dispute resolution forums, it must be appreciated that an effective standard for proving cause and effect is in fact an element of the entire process of risk management. As such it has to be considered and determined at the outset before the parties are contractually bound as part of the process within the process of risk allocations.

Construction, A Risky Business – Recognising the need for Effective Risk Management

4. The archives are fill with histories of problems faced in construction projects worldwide whether it is a mega multi-international project, complex type of project or even small local projects. In fact, our own experience will show that even for small renovation works, there can be comparatively big problem. The industry is notorious for problems and claims.

5. Variations, delays and disruptions with its ensuing claims or cost-effect are the common features of every type of construction project. The escalation of the construction cost either suffered by the owner or the contractor and the inevitable delays with the opportunity loss and the increased financing cost is the hallmark of the construction industry.

6. It seems that these standard problems worldwide have been on-going for centuries without any sight of any form of control. We only have to look at Malaysia to see the number of reported problems with construction projects lately to realize that the control mechanisms are not in place. The Matrade building[1], the Kuching Prison and now the latest episode of the highway in Johor joining the new customs, immigration and quarantine complex which was budgeted at RM250million but now reported as having ballooned to RM470 million, are some of the more published ones simply because they were public sector tax-payers projects. Malaysia is rife with projects that have been abandoned, scaled-down and delayed even in the private sector.

7. However, we Malaysians are not alone. This is a global problem. In the UK, surveys done show that there are a large number of delayed and cost-overrun projects[2]. Even the UK have its latest infamous construction projects such as the Scottish Parliament building known as Holyrood[3].

8. It has to be understood that this is not a particular problem to a particular type of project but it affects all sorts of projects at all types of locations within all types of legal systems, cultures, languages and protocols or practices. Delay, variations and disruptions are universal to all construction and civil engineering projects and it cannot be avoided. Construction is a risky business

[1] Original Cost of RM167million had experienced a cost overrun of RM119.5million with extensive delays
[2] 1999 survey in the Construction News (18.4.1999) shows that 58% of private projects are delayed and 32% suffer cost-overruns. It also shows that 66% of the UK Government projects suffer delays of more than 2/3 of the original period prescribed. In 2002 these figures remained the same.
[3] A delay of 3 years and GBP150million cost-overrun. The Holyrood enquiry report in 2004 by The Rt. Hon. Lord Fraiser of Carmyllie QC laid the blame squarely on design delays, over-optimistic programming and uncertain authority.

but one must be aware that it can be tamed and controlled. One must be aware of the type of risks as far as possible and the techniques to manage or control the risk. To quote Sir Michael Latham[4]:-

"no construction project is free of risk. Risk can be managed, minimized, shared, transferred or accepted. It cannot be ignored."

9. Once the risks are understood, allocated and the contract is executed, the concerns of the parties then switch to the most essential elements of managing and completing a successful project for both the developer/owner and the contractor namely:-

- If a risk event arises, does the contract conditions and terms clearly set out who is responsible;
- For the benefit of the project, are there any methods by which either the owner/developer or contractor can mitigate the effects of the risk event;
- Can the effects of the risk event be conclusively proven or disproved;
- Is there an effective forum where any disputes on the risk allocation and the effects of the risk event can be resolved.

10. All the above concerns are clearly matters that ought to be addressed prior to any execution of contracts.

11. Today in the construction industry, there are effective processes available for a contractor and even a developer/owner to utilize and to help them focus their minds on the kind of risks that may exist within a particular project and the risks that obviously arise based on their own abilities or lack of abilities and potentially the abilities of others within the project.

[4] In the Final Report on the Government/Industry Review of Procurement and Contractual Arrangements in the Construction Industry prepared by Sir Michael Latham.

12. These tools then allow a party to determine and establish the following:-

- the chances of any particular risk occurring;
- who should be allocated the determined risk;
- to ensure that the allocation is effective;
- to manage the particular risks in any event so that the effects are mitigated;
- if you are to bear the risks, to ensure that the appropriate standard of cause to effect is required thereby minimizing exposure to excessive claims;
- alternatively, if others are to bear the risks, to ensure there is a clear and precise but also achievable standard of cause to effect which would ensure that proper claims would be compensated;

13. With an effective implementation of the above considerations, it provides parties with some degree of control, management and ability to mitigate risk effects, when the risk events inevitably occur. Further, when the risk effects end up causing a financial loss, it provides a clear understanding of who is to be responsible and to what extent, thereby encouraging settlement of claims or expedient determination of disputes with some degree of certainty.

14. Therefore, the starting point is to consider the process for determining the risks and its allocations, which in turn will focus the parties carrying out the exercise, to determine what standards for proving cause and effect they may wish to apply.

Risk Allocation Techniques

Identifying the Risk

15. There are international contract drafting experts who have tried to create spreadsheets setting out the variety of risks for a variety of projects as a technique in advising their clients on the choice of standard forms for the conditions of contract and its possible amendments. These spreadsheets run into 100s of risks.

16. Essentially developers/owners tend to have 3 broad concerns namely cost, time and quality. Contractors on the hand have 4 broad concerns namely being paid the true value of works and on time, recovery of cost for variations, delays and disruptions, interference by 3rd parties and unforeseen contingencies in respect of the method of construction and temporary works. Further depending on who has the responsibility for the design, the broad concerns related to the design would be the sufficiency of the design for its purpose, sufficiency of design information for construction and the requirements of the regulatory authorities.

17. All the potential risks should and ought to be captured within these broad spectrums of concerns. Any other risks outside the spectrum ought to be risks that are essentially shared such as acts of god.

18. Academics have tried to categories the risks applicable into neat compartments that focus the mind to the allocation of risk exercise. Once identified, all the risk within a particular category is then either placed on the developer/owner or contractor or shared. The type of categories that come to mind are such as legal, dispute, design, buildability, biddability, construction, financial, political and insured risk.

19. Whatever categorization is used, it is essential that one can still identify what type of risk falls within the categories and then make a decision as to who is to bear the risk. This is commonly known as risk allocation.

20. As a developer/owner, there is also a need to identify where the risks can be controlled and minimized because merely allocating the risk to one party does not resolve the essential problem namely, that the construction project itself ultimately suffers the risk.

21. There must also be an appreciation that mere allocation of risk does not mean that the risk at all times will be maintained with the party so allocated. It must be recognized that conduct during the progress of a project may cause the risks allocated to switch. Therefore if possible, even these areas must be identified and considered.

22. Generally speaking, the first step is to define and know the objectives of the party involved and to identify the potential courses of action to attain the objectives. Then the party needs to identify the factors that present a risk or an opportunity in so far as it hinders or promotes the attainment of the objectives. Thereupon, the course of action that presents the maximum ratio of opportunity to risk co-related to the objectives, ought to be adopted.

23. The process of determining and allocating risk is fundamentally linked to the drafting of the conditions of contract, which is effectively the choice of standard form conditions of contract and any amendments thereto. It may also involve the drafting of terms in the specifications especially as to items of works within the preliminaries.

24. The process should essentially be:-

- Identify the general objectives on some of the main criteria for the Project. The design and supervision responsibility and the importance

of a fast completion will dictate the choice of the contractual relationship and the price mechanism;

- Once these general objectives are determined along with the procurement relationship and the price mechanism, identify and make a conscious decision on the allocation of various risks arising therefrom, namely whether to retain the risk, transfer the risk, share the risk and even insure the risk if possible. This would then determine the conditions that ought to be in place to meet the objectives. It must however be understood that it would be natural to fail to have foresight of all risks of which human and nature can create, as they are truly infinite.

- Allocate the risk through the conditions of contract or even the specifications or drawings but ensure that it is clear, unambiguous and is complete. This process cannot be stressed enough. Almost all disputes arise to some extent due to lack of clarity or ambiguity with the Contract Documents and the allocation of risks. Good draftsmanship (if there is such a thing) is the essence of minimizing disputes. The more complex a provision or a condition especially those with extensive sub-provisions and cross-references, the more likely interpretation ambiguities will arise. The need for clarity is even more important in the international market where parties have differing legal traditions and therefore differing expectations and understandings as to the effect of certain provisions. Alas it would be delusional to believe that the perfect draft of all contractual allocations can be achieved because language is after all an imperfect tool.

Principles on Risk Allocation

25. If risks are not allocated, then the law tends to take the position that any matter directly within the control of the developer/owner or his agents will be a

developer's/owner's risks and all others including neutral event not caused or within the control of either party, will be the contractor's risk. The contractor's risk would even include the soil conditions as that is seen as a buildability risk[5].

26. The allocation of risk has a correlative effect on planning, time, cost and the bid. On the developer's/owner's part, the more risks that are placed on a contractor, the more likely the cost of construction will escalate. On the contractor's part, the higher the bid the more unlikely the award.

27. There should also be a recognition by the parties that placing excessive risks on the other may jeopardize the other's solvency and in the end, that cannot be in their own best interest.

28. Therefore an essential element in allocating risk is the practice of certain general ethos or baseline principles that ought to prevent the costs from escalating or will allow a strong bid and reduces the likelihood of disputes:-

- an identification of ones own weakness and strengths related to the various likely risks;
- where the strengths surmounts the weakness in any particular risk, one should assume the risk or not factored the same into the rates;
- where one is more capable of controlling and shouldering the risk arising from ones familiarity, experience and ability in controlling the risk, then one should assume the risk or not factor the same into the rates;
- where one is more able to influence the magnitude of the risk and to therefore minimize the risk, then one should assume the risk or not factor the same into the rates and use the opportunity to treat the risks

[5] Bottoms v Mayor of York [1892] Hudson's Building Contracts 4th edition, volume 11, page 208

so allocated as motivational towards minimizing and controlling it (this is sometimes known as the "least-cost risk bearer");

- where the risk can be transferred to 3rd parties such as insurance, this should be encouraged. For a contractor, some risk can be transferred and borne by its sub-contractors whereby a right to claim and recover is limited to a like right and amount of recovery by the contractor;

- where a risk is wholly outside each parties control, then risk sharing is also encouraged. This applicable to force majure and inclemental weather (mere bad weather risk is borne by contractor and inclemental weather risk is borne by developer/owner);

- certain risk are placed based on overall objectives of the project depending on whether time, quality or cost is the driving factor;

- and finally some parties chose to use the foreseeability model with distinctions applied to risk that are "known", "known-unknown" and "unknown-unknown". Known risk to a contractor are transferred to the contractor, known-unknown is divided to 2 categories one being reasonably foreseeable and the other being remotely foreseeable where the former is transferred onto the contractor and the latter is kept by the developer/owner and the unknown-unknown is shared, transferred to insurers or borne by the developer/owner.

29. There are various views on the baseline principles to be adopted but they are generally the same[6]. In fact some professional bodies have set up models to be used but their models are based on specific emphasis to elements such as cost.

[6] Abrahamson Max W, "Risk Management" [1984] ICLR 241
The Australian Joint Working Party , "No Disputes: Strategies for Improvement in the Building and Construction Industry (the No Dispute Report) [1990]
Construction Industry Institute of the USA, "Alocation of Insurance Related Risk and Costs on Construction Projects [1993]

30. Whichever risk analysis models are used, they will all be based on a set of assumptions but these assumptions, depending on how much effort on research is made, can be fairly constructive and informed making the results more likely to be accurate.

31. There is a need to develop a systematic and objective management of risk into a project planning and execution programme, for both developers/owners and contractors. There is a need for all relevant organizations to establish philosophies, attitudes and procedures designed to reduced uncertainties, claims, to stimulate informed bidding, to increase awareness amongst all parties and key staff involved, to reduce unenforceable contract language and to allow easy and efficient contracting practices which are more cost effective.

32. The organizations can do so by[7]:-

- Forming a task-force or committee of project knowledgeable stakeholders. These should include consultants or experts, previous experienced personnel of the organization, the project team with their knowledge of the site (this is an important aspect as the proposed team will understand and implement better the views gained in the risk allocation and management process);

- Setting up a workshop to identify and then predict the frequency and severity of risks and prioritize those risk warranting further attention. A comparative study can be made through research, of the projects in the near vicinity, previous projects involving the parties and any previous similar project carried out by the organization and the proposed team;

[7] Paper delivered by Smith Robert J at the 2nd Civil Engineering Conference in the Asian Region at Tokyo 2001

- Draft working papers should be circulated to the various experienced personnel in the organization with the possibility of further comments or thoughts;

- Setting up a separate workshop to develop a specific risk management implementation plans based on severity or frequency of the risk taken up by the party;

- Contract administration training and contract familiarization.

33. It has been recognised that misallocations of risk is the leading cause of construction disputes[8]. Further, an enhanced and a broadened cognisance of the wide range of risks that could materialise will result in better informed and more prudent designs, improved specifications, better informed bids, improved project and communications and it ought to enhance the contract administration practices.

34. A general list of risks is attached at Addendum 1 which is in no way is to be construed as an exhaustive list. The list has also been divided to the various suggested allocations[9].

35. The checklist employed can be varied to reflect how much thought has gone into the allocation process. It is felt that the checklist should at all time identify not merely the risk and the party so allocated but should contain the specific cause or weakness within the risks categories that gives rise to concern had by the party preparing the checklist and the likely effects of the risk.

36. Only then can the parties involved in the risk allocation process also put their minds to other very important matters that should be covered in the checklist

[8] In the USA, Center for Public Resources Inc [1991]
[9] Smith, Robert J, "Allocation of Risk – The case for Manageability"

namely, what are the preventive measures (not the contract clauses) that can be employed to avoid, abate and reduce the chances of the risk occurring. As previously stated, the developer/owner should consider this fact even if the risks is intended for the contractor simply because it still remains a risks of the project.

37. The checklist should also include a corrective consideration as to the intended steps for mitigating the risk or limiting the consequences of the risk, reducing the uncertainty of the outcome of the risk event, passing the consequences to 3rd parties and handling the same once the risk event has occurred with some risk reduction methods. To this should be added any consideration of any legal risk handling possibilities that ensures that the party exposed is only exposed to a fair and reasonable outcome of the risk event.

38. A contractor is also encouraged to deal with the risk allocation and handling analysis in its planning and scheduling process as well as carry out such analysis for the risk arising from its sub-contractors and suppliers

39. An example of the risk analysis checklist is attached in Addendum 2.

Design and Supervision Risk

The Contractual Structure

40. Part of the process of identifying the risk commences with the choice of procurement of the project or the choice of the contracting relationship. This particular choice in itself requires an exercise of assessing to what degree the developer/owner can manage its own risk. This would then tend to determine the procurement approach and will clearly dictate the cost budget for the project.

41. In deciding on the choice of procurement or contracting relationship, a developer/owner must consider 2 main issues namely the design function and the supervision and co-ordination of the construction works function. The determination of where the risks related to both these items ought to be placed will then dictate the contractual relationship chosen.

42. A design risk placed on a contractor may not result in an increased cost simply because the contractor has an opportunity to design a structure which can be built more cheaply and quickly.

43. There are also other considerations such as funding or financing or a need for a fast completion (military project) that may require a completely different structure to the contractual relationship with its ensuing dictated risks allocations.

44. Local conditions such as the experience and technological ability of the contractors or sub-contractors will also be a factor for consideration.

45. Therefore the developer/owner will have to consider the following options:-

Traditional Structure

45.1 most commonly known as the pure construct or build contracts, where the developer/owner appoints its own designer who based on the conceptual requirements produces a set of design drawings that ought to be sufficient for construction;

45.2 within this structure, there can be instances where these designs are not sufficiently advanced (fast track projects) and the contractor is asked to take responsibility over some aspects of the detailed design;

45.3 there are also instances where there is an option for alternatives or alterations introduced by the contractor which if accepted renders these aspects of the design as within the contractor's responsibility;

45.4 however, the essence of these traditional structure is that normally the developer/owner is responsible for the design vide his agent the designer, and is also responsible for the supervision and co-ordination of the project. Generally the designer or the group of consultants would carry out the project supervision guiding and controlling the contractor during the progress of works and most importantly supervising the interface between the design and the construction;

45.5 there are some distinct factors that generally have to be considered in deciding on whether to adopt this structure namely:-

(i) is it a specialized project with a specialized concept that requires the input of professional and independent designers;

(ii) further, is it a project where a contractor's technical capacities may not correspond with the type, complexity and standards required;

(iii) is the developer/owner uncertain of what concept is required and seeks to settle this issue firstly before deciding to construct;

(iv) is the design concept settled but time is not of the essence;

(v) is the design concept settled but time is of the essence. If this is the case, then having a distinct design phase from the construction phase, and requiring a contractor to familiarize itself with the design and technological requirements may prolong the entire process;

45.6 if such a structure is to be implemented in a project, it is wise to consider the effective role of the designer and the duties and obligations of such persons in correlation to the contractor carefully. This is because there are various separate and distinct risk that arise from the traditional structure due to the involvement and interaction between the contractor and the consultants;

Single v Multiple Contractors

45.7 upon deciding to use the traditional structure, the developer/owner must consider whether it is preferable for him to split the clearly distinct items of work and award the same to multiple contractors;

45.8 the tendency is for the developer/owner to utilize specialist sub-contractors for specialist areas of the works using the nominated structure and to use different contractors for the sub-structure and super-structure works, where applicable. However, the extent of distinct items of work that can be divided up is dependent on the type of project and the complexity of the interface between the distinct items of work in terms of the design, the temporary works and time;

45.9 there are some distinct factors that generally have to be considered in deciding on whether to adopt this structure namely:-

(i) the cost benefit by contracting directly with the specialist and various trade contractors. If the design is not complex in certain areas and the supervision and management team are considerably experienced, then the cheaper utilization of domestic or local contractors may be possible;

(ii) the direct control over the actual contractors who are involved at site (rather than the control exercised by the main contractor over the various sub-contractors). This in turn will result in direct control of the quality of materials, the interface between the design and the construction process and the problems faced at the site vis-à-vis the actual contractors at the site;

(iii) the onerous responsibility of identifying the distinct packages and contractual needs;

(iv) the onerous responsibility to co-ordinate the various contractors and packages including their schedules, and temporary works;

(v) the onerous responsibility to interface the design of the differing items of works especially if there has been any defects or variations and any clashes discovered;

(vi) therefore the need to appoint an extremely experienced and pro-active management and supervision team, normally from the consultants/designers to carry out (iii), (iv) and (v) above, with its ensuing reduction in the cost benefit gained. There can also be appointment of engineering procurement and construction management (EPCM) to carry out these services;

(vii) the major risks of increased and varied claims from the various contractors;

Management Contracting

45.10 there is one other general variance to adopting the multiple contractors structure namely, management contracting. This is by way of appointing one lead contractor with the largest portion of the works who is then placed with the obligation to administrate and ensure the co-ordination between the various contractor schedules and to interface between their respective temporary works. This effectively means that a lead contractor will be required to coordinate and manage the project;

45.11 in fact within the management contracting structure there are a number of possible further variances. This includes placing all the other sub-contractors under nominated packages and making the management lead contractor responsible for the time, cost and quality control of these other contractors. It is unlikely however that in this situation the lead management contractor would be considered responsible for the workmanship or any design input from the other contractors unlike in the turnkey structure;

45.12 the role of the lead management contractor can vary as can its mandates or rights;

45.13 a further variance to this structure is to involve the lead management contractor in the tendering process for the other contractors and thus arguably making him responsible for the other contractors' workmanship or design input;

45.14 there are some factors that generally have to be considered in deciding on whether to adopt this structure namely:-

(i) to ensure that the management contractor's fee is normally based on target pricing which is pegged to the decrease in the price or cost to the employer. It is therefore an incentive for him to control price by running and efficient and tight site;

(ii) alternatively, the appointment of the management contractor only to co-ordinate between all contractors;

(iii) there is also the risk that the lead contractor may not be able to effectively co-ordinate especially if the other contractors are also competitors and the risk of the lead contractor being partisan to only its needs;

Design and Build or Turnkey

45.15 this form of contracting places the duty to design and construct solely on the contractor and generally the traditional turnkey contracting structure is mainly based on an entire design and entire construct concept;

45.16 there can also be what is termed as partial turnkeys, where various contractors are actually appointed on separate design and build requirements. This is however not advisable as the interface problems do not only relate to that between the works and the designs, but also the design to design which may result in a technical nightmare;

45.17 the other hybrid is the part turnkey, part traditional structure. This is especially where in a particular project there may be a requirement for a complex equipment system or complex civil requirement within the entire design concept. If the project is only limited to 2 sets of contractors, and if the works are actually distinct in time or space, the interface problems may be reduced and therefore this hybrid system may be workable;

45.18 in the traditional turnkey type of contracting structure, the consultants are merely involved in the tender and possibly the supervision of the work (or through project management company) and this may include providing them with some control over the designing and construction process depending on the developer/owner's requirements;

45.19 this contractual structure is normally tendered out on a lump sum firm price basis;

45.20 there are some factors that generally have to be considered in deciding on whether to adopt this structure namely :-

(i) the entire responsibility and risk is with the contractor, other than those caused by the actions of the employer which ought to be minimal;

(ii) the general contracting dangers to the developer/owner in respect of hidden allocations of risk are normally avoided;

(iii) the design will correspond with the contractor's technical capacities;

(iv) the efficiency created out of a fast track project may potentially reduce the price of the project;

(v) the danger that the design is sacrificed at the expense of the cost of construction (under-design);

(vi) the developer/owner's control of the project is minimal;

(vii) the developer/owner or his consultants must be clear and precise as to their design concept and requirements at the tender stage as otherwise, there will be extensive variation issues and obviously the ensuing delay issues. There have been instances where the

design has been advanced by the developer/owner and his consultants before placing it on a turnkey structure in order to ensure there is no under-designing (joint design turnkey);

BOT (Build, Operate and Transfer)

45.21 this structure normally applies to public sector projects or concessions;

45.22 the contractor is required to source its own project financing and recover the same as well as profit from operating the project for an agreed period;

45.23 it is one of total responsibility and total risk, where the contractor effectively designs, constructs, finances and has to ensure that the project is completed on or before time and is free of defect so that the contractor may be able to operate it immediately;

45.24 thereafter, the contractor has the added risk of the profitability of the operation and has to maintain the facility over the number of years agreed;

45.25 for the purposes of the construction, the BOT contract structure is usually based on the turnkey form of contract as the differences between the both structures of contracting do not relate to the actual construction and responsibilities but are different in terms of the financing, the operation upon completion and the maintenance;

45.26 the transferee will have the opportunity to verify the quality and the output capacity of the project whilst it is being operated by the contractor;

45.27 the incentive to the operator must be maintained especially as the operation period draws to an end as otherwise the maintenance of the

project may be jeopardized. Some conditions of contracts require a limited period for defects and maintainence liability even after the transfer has occurred;

45.28 the BOT structure can become very complex due to the parties involved and the financing aspects. There may be various parties in a consortium obtaining the concession who in turn may contract with another set of parties for the design and construction whereby these said parties may also separately finance the design and construction. The concessionaire may then appoint a separate party to operate and maintain the facility and the margins are then split between the concessionaire, the contractors and the operators. When financiers get directly involved in the contracts, the structure very often takes a different shape and becomes highly complex and demanding as they will seek to demand an implementation of a contractual scheme that protects their investment and risk;

45.29 this structure becomes highly attractive when public funding is inadequate or when private management is seen as far more efficient and therefore beneficial;

The Price Structure

46 There should also be a decision on the price structure intended, as part of the process of determining who and how far is a party to be responsible for the design uncertainties or certainties.

47 There are generally 3 possibilities but variances within each structure are quite common:-

Lump-Sum

47.1 this structure fixes the price regardless of the contractor's as-built cost and therefore places substantial risk on the contractor build-ability and assessment of the works involved from the specifications and drawings. The tendering cost for the contractor is normally higher due to the extensive assessments that have to be made;

47.2 this structure normally translates to a higher tender price unless, the contractor is claims orientated and the contract conditions, specifications and drawings are weak in their drafting or preparation;

47.3 there are circumstances where the price may change but generally the risk of the quantities involved and the works that are indispensably necessary to complete and build lies squarely with the contractor;

47.4 it is common to require a breakdown of the lump sum prices along with a schedule of rates for the variation works;

47.5 payments are usually in the form of stage payments or milestone payments;

47.6 the developer/owner would however have to compile and transfer sufficient information on the design and any other factors that may affect the contractor's buildability so that a realistic lump sum price may be formulated;

47.7 despite providing some of this information affecting the buildability, normally as a measure of protecting the developer/owner, the more crucial elements of the information presented may carry provisos requiring further investigation from the contractor or be deemed to have been further investigated by contractor and the accuracy or veracity of the information is normally expressly excluded so as to avoid liability arising therefrom;

Cost reimbursable

47.8 in this structure, the contractor is paid for the cost incurred plus a pre-determined margin of profit, which can be fixed or fluctuating;

47.9 if the fluctuating fee is dependant upon the cost of the project, then in order to provide an incentive to cost efficiency, the developr/owner may introduce a target cost which if exceeded may incur a decrease in the profit or fee earned. The fee disincentive may likewise be pegged to the completion date;

47.10 this pricing structure is normally used where it is impossible for parties to fully assess the construction cost because there are numerous uncertainties, such as in tunneling projects.;

47.11 it should also be used in fast-track projects where the design is being developed as the construction work is proceeding as it allows the overlapping of design and construction processes;

47.12 it should also be used where there are non-financial objectives, ie. early completion is the imperative objective;

47.13 another method that may limit the eventual cost of such a form of pricing is to apply a “reasonably expended” standard;

Unit Price or Priced Bill or Re-measured

47.14 this price structure establishes prices fixed by the contractor for various units or items of work involved and described in the bill of quantities and such prices are usually deemed to include the cost of materials and labour;

47.15 the risk as to the quantities and the take-offs from the drawings are placed with the developer/owner but normally the risk of a change in

the cost elements related to any given unit of work priced vis-à-vis the rate in the bill of quantity is with the contractor although some structures allow a formulative increase for a percentage increase in quantities (where the quantities increase or decrease by a +/- %). These are commonly referred to as rates with escalations;

47.16 this method is extensively used as it is the one of the most commercially viable form of contracting for the contractor especially with the open-ended valuation provision applicable in most standard forms where in certain circumstances, even the risk of the increased cost comparative to the rate can be dislodged;

47.17 the advantage of using this pricing structure is that the contractor will more likely than not keep to the specifications, as there is no interest in cutting cost.

The Owner's Objectives

48 A simple table has been set up to show how the general effect of cost, time and quality risk co-relates to a developer/owner or to a contractor based on the procurement and price mechanism structures as discussed above. This is seen attached in Addendum 3.

49 A proper risk assessment therefore becomes the first step in the determination of the duration of the project.

50 The developer/owner would generally have to bear in mind the following objectives and project parameters in determining the contractual and price structure[10]:-

- Is cost control a major consideration;

[10] Paper delivered by Golloway, P and Nielsen K, at the 2nd Civil Engineering Conference in the Asian Region at Tokyo 2001

- Does the owner wish to control the contingencies;
- Is a bid competition required;
- Is there to be a maximum owner involvement;
- Is there to be minimal owner involvement;
- Does the owner have oversight capabilities;
- Is there to be a single source responsibility;
- Does the owner require the contractor to provide project funding;
- Are the project design, scope and specifications clearly defined;
- Are the complexities in the design and the details clearly defined;
- Are the quantities certain;
- Is there minimal scope changes expected;
- Is there a potential for large scale variations;
- Is the schedule tight;
- Is the project environment volatile or stable;
- Is it a large complex project;
- Does the project involve primarily new technology;

51 Developers/owners must be willing to review and revise their actions in order to not only reduce their own risk but to also obtain the best price and at the same time avoid placing the project at too much of a risk by placing the contractor at too much of a risk. The steps to be taken ought to include:-

- Reviewing the contract documentation before giving out to tender and testing them against the checklist of the risk allocations;
- Making more information even for soil conditions known to the contractor. This is despite there being exclusions of liability. Alternatively, ensure that the serious tenderers do carry out soil investigations or obtain the further information before commencement;
- Carrying out constructibility reviews to ensure design is cost efficient;
- Utilizing real time dispute resolution procedures (temporary finality – adjudication, references to experts or the dispute review boards);
- Establishing realistic contract performance period;
- Budgeting and having the funds for contingencies;
- Planning for communications or aspects of partnering;
- Pre-planning for permits and authority approvals;
- Accepting that soil and site conditions is a risk best undertaken by the owner otherwise cost of the bid would escalate or risk of non-performing contractor. Empirical research has shown that generally there is no increased cost due to claims by allowing a provision for reasonably unforeseen soil conditions claim[11];
- Delegating decision making authority to owner's representative;
- Allowing for pre-defined formulae based adjustments of value for variations;
- Pre-defined procedures for claims and substantiation;

[11] DW Halligan, WT Hester & H R Thomes, "Managing Unforeseen Site Conditions", Journal of Construction Engineering and Management, American Society of Civil Engineers [1987]

- Realization that consultants and determiner SO can waive strict procedural requirements and can assume liability through conduct and to provide protection for the same (unauthorized acts);

- Considering or seeking advice on new risk sharing practices or clauses;

52 It is to be noted that a completely over optimistic duration will either lead to fewer tenderers of a doubtful nature, higher cost or a delayed project with its ensuing financial repercussions which the owner/developer would have to endure before any possible recovery from a contractor. As such, the is now suggestion that developer/owners should also utilize tools that have traditionally been used by contractors in pre-planning and scheduling their works when considering the overall duration of the project.

Modern Concepts of Managing Risk

Partnering

53 One of the traditional criticism and the cause of a lack of interest in public sector projects used to be the fact that the Government and its consultants refused to assume any risks. In 1990, the Risk Allocation Subcommittee of a Joint Working Party of the Australian National Public Works Conference and the National Building and Construction Council noted under their analysis paper :-

"the private sector should expect to assume a higher level of risk that a normal construction bid but the public sector cannot assume a zero risk posture as this will not allow a properly priced financial proposal and will discourage participation and subsequent privatization opportunities."

54 The new millennium has seen the U.S., U.K., Australia and even Hong Kong implement the new concept "partnering" relationship for public sector projects so as to manage cost and time overruns. This concept is also a positive step towards the elimination of a claims culture, where productivity is tied in with rewards with time spent moving forward in a project and not postulating or looking for loopholes and bickering at the site in order to enhance a claim.

55 What is partnering? In essence it is :

- A maturity of realising that value is in the long term relationship obtained by trust and openness where the long term goal is for profitability of all involved;
- All parties are encouraged to openly address problems because each party realizes that no one benefits when there is exploitation;

- Innovation is encouraged;
- Each party is aware of the others needs and weaknesses and serves to work together to achieve a win-win;
- The project benefits, the overall performance is improved, the reputations are enhanced and the profitability of the project is increased thus allowing a sharing of this benefit;
- It is not however an excuse to compromise the quality or to introduce variations without cost;
- There is no guarantee that disputes will not arise or that the budget will not be exceeded;

56 Partnering makes use of a collaborative approach between contracting parties where 2 or more organisations work together to improve performance through agreeing mutual objectives, devising a way for resolving any disputes ("nipping problems in the bud") and committing themselves to continuous improvement, measuring progress and sharing the gains[12].

57 Teamwork and good faith underscore the relationship between parties where timely completion and cost reduction becomes the all-pervading mutual contractual objective. However, there must be a partnering culture within the management of the parties involved.

58 A successful partnering solution can only occur if there are commitments on 2 levels :-

(a) the senior management, where the tri-partite commitment arrived at during "brainstorming sessions" is often embodied in a written document termed as a

[12] Definition extracted from Sir John Egan's report "Rethinking Construction"

"Partnering Charter". It is to be noted that at this stage there is no dispute or any view that one party is the enemy and as such, the commitment to solving problems rather than disputing them is usually forthcoming; and

(b) the staff level where the commitment begins with teambuilding workshops in which goals, open communication, trouble shooting and internal dispute resolution processes are agreed upon. The workshops continue throughout the project.

59. The Partnering Charter is then defined as a Contract Document as therefore the agreed processes must be implemented in the spirit of the Partnering Charter. The success of partnering also depends on many of the same personnel staying on throughout the process from the non-aggressive conditions of the pre-contract till the project is completed.

60. Amongst other projects[13], the Andrews Oilfield project involving BP has been referred to as a successful partnering process where there were brainstorming processes for one year between BP and contractor and both sides came to a viable plan within BP's original budget of GBP 370 million (which was initially found not economically viable as the cost was estimated to be GBP 450 million) and the timescale. They executed an additional alliancing agreement. The project was completed under budget at GBP 280 million and early and both parties shared the success. All the additional costs which arises from distrust procedures normally implemented in a project ie. duplication of inspectors, certifications checking processes, were cut out.

[13] Also the House of Commons Project in 1999, the Thames Water supply project, the 3Com office and research facility project, the Bleak Hill School for St. Helens MBC , 2 R&D centers for Nortel Networks, the Roko Leisure Health and Fitness Club in Portsmouth, Monmouth Sports Hall in Monmouthshire, the Brownfield regenration scheme for Ealing Family Health Authority, UK, all referred to by Sir Michael Latham in a conference in Kuala Lumpur on 26.2.2002.

61. The end result was that the contractor gained more through a profit sharing scheme where it received a bonus of GBP45 million over and above its cost plus payments.

62. Partnering suits projects that are of high value and high risk where the pricing structure tends to be a cost reimbursable type contract or a guaranteed maximum price type contract ("GMP"). The partnering charter's or agreement's philosophy must be reflected in the construction contract as well.

63. The interesting legal elements normally adopted in a partnering process can include the involvement of the contractor in the design process, the adoption of good faith requirements with the uncertainty of how the courts would interpret the same, the construction cost is to be treated as a prime cost with an undertaking to have an open book basis for the cost incurred and the GMP shall be the benchmark, a lessening of the severity of the LAD by attaching milestones with grace periods for catch up or setting of LAD against costs savings and bonuses, a reconsideration of the need for retention sums or defects liability periods and a much more amicable dispute resolution process being made compulsory.

64. In England, despite a partnering charter not being incorporated into the Contract Documents, judges were willing to consider the intention of the parties derived from the charter as a basis to construe rigidly or flexibly a particular ambiguous clause in the conditions of contract[14].

65. In Malaysia, it is likely that a well drafted partnering contract will be construed as effectively a project partnership defined by the contract where concepts of fiduciary duties and a duty to use best endeavours to ensure the

[14] as per Judge Humphrey Lloyd QC, Birse Construction Limited v St. David Ltd [1999] BLR 194

success of the venture will encapsulates the good faith principles[15]. However, there must be clear drafting to limit any excessive construction of the fiduciary principles within partnership which may not be suited even for a partnering concept.

66. So why partnering:-

- Reduces real cost[16];
- Improves predictability;
- Meets the end users needs (especially public projects);
- Improves on quality and safety;
- Avoids hostilities and the possibility of one party (which could be any party) being left with a loss[17];
- There should be projects where reputations are made whilst no one losses;
- Avoids the time wasted on claims and avalanche of accusations and correspondences without solutions;
- Time for the industry to change and companies to become successful in construction technology and experience rather than a few rich men!
- Margins may not be as great as the "good" jobs but you have a chance at avoiding the "bad" ones;
- The negatives tend to be the trust factor amongst people at management (at site it sometimes is seen) and the bag guys won't let it happen. Should'nt this change?

[15] as per Gopal Sri Ram JCA, Hartela Contractors Ltd v Hartecon JV Sdn Bhd & Anor [1999] 2 CLJ 788
[16] According to Sir Michael Latham's project examples it would seem that partnering averages a 10% to 15% cost savings. In the USA it is reported to save up to 5% of the cost, per Heale Andrew J, "Construction Partnering : Good Faith in Theory and Practice", Const Law Journal 1999
[17] Sir Michael Latham describes this proposition as "why change, didn't we do okay?" resistance to change and the short answer is, "no we didn't do okay, or if we did, someone got kicked and sometimes it was us"

67. The current available standard forms for partnering are the PPC 2000 and the NEC Partnering Option 2001.

Statistical Sampling Technology

68. In Malaysia there is seemingly a lack of emphasis placed on techniques of risk analysis available in the market as a process for the purposes of planning, fixing durations and scheduling.

69. Time is a matter of concern for both the developer/owner and the contractor and the feasibility of the time or duration fixed by the developer/owner or accepted by the contractor requires a constructive analysis of likely impacts, likely effects and this may then dictate the likely allocation, control, management and mitigation methods employed for time related risk.

70. Early risk analysis can provide early foreseeability of the potential risk events and likely impacts thereby determining the considered approach for the contractual structure, price structure and contract conditions.

71. The techniques are all models using statistical sampling of variable events and likely impacts. Risk analysis using technological statistical sampling has become the most considered method of recognizing likely effects by likely causes, the chances of those causes and effects occurring and the extent to which they can be considered acceptable or they can be mitigated. This is not just a part of a successful decision making on risk but it is a part of a successful and efficient project management, especially for large and complex projects.

72. Today due to the existence of usable, functional, convenient and speedy risk analysis software, the techniques are available to many. Most of the softwares

in the market can be used as a stand-alone application or can work as an add-on to the commonly used Microsoft Excel and Microsoft Project. Some of the examples of these risk analysis software which are available in the market are Primavera Monte Carlo, Pertmaster Project Risk, Intaver Risky Project, Palisade @RISK for Project, Crystall Ball, Projistic etc.

73. All risk analysis are essentially probabilistic models developed to translate project characteristics into risk boundaries mainly related to time. There needs to be firstly the duration for activities within the schedule or a planned duration, which is considered reasonable. There should also be a construction logic in place which effectively translates into a CPM.

74. Most of the softwares adopt the Monte Carlo Simulation, the Latin Hypercube Sampling, the Petri Net Simulation or the what-if simulation, and perform reiterations to generate outcomes by using various types of probabilistic distributions such as Triangular, Normal, Uniform, BetaPert, LogNormal and so forth to simulate the performance of a project. Essentially, the power of these simulations and reiterations lies in the picture of possible outcomes it creates. Simply by inputting the uncertainties, choosing the best suited distribution and running a simulation, these advanced risk analysis tools takes the project model from representing just one possible outcome to representing thousands.

75. The variable or risk events must be identified from literature, domain experts or experience. The effects of these risk events are also then to be gathered from the same source. Then a probability is derived for each simulated risk events to effects and finally the model is verified or validated. There are numerous literature to gather risk events and likely outcomes. Some of them are referred to in the attachment at Addendum 4.

76. The use of these type of softwares are exceptionally useful tool for contractors to work out their planning, their schedules, their effective CPMs and their floats. It also allows simulations of mitigation plans or corrective plans in order to recover likely effects and the contractor can prepare and employ any particular mitigation plan that show the best recovery based on the probabilities of effects.

77. Using such techniques becomes an effective employment of a good risk management system during the planning and scheduling stage and also during construction stage which ultimately enables the project team to confidently manage the project by allowing introduction of corrective measures, monetary contingency and schedule float in order to minimize losses to the project and maximize the likelihood of the project finishing on time and within budget.

78. With these software, uncertainties or risk in time, resources and costs can be conveniently input and modeled for a project using various types of distribution probabilities and perform simulation to produce a more realistic project by evaluating and calculating the chances that the project will be completed on time and within budget, and presents results in straightforward answers and easy-to-understand formats.

79. With this wealth of extra information, the following questions can now be confidently answered with ease based on the statistical probability of events rather than just having to rely on one's experience and his gut feeling; What is the probability of finishing the project on time and within budget? What are the chances of finishing the project by this day? Which tasks have the most amount of risk and are most likely to cause project delay and need to be mitigated first? How much is the project most likely to cost after incorporating the risk mitigation measures?

80. In addition, the risk analysis application is able to monitor the progress of construction by assessing the need to refine the initial strategy or to change courses when a new risk is discovered or as resource availability changes during the construction phases. This effectively helps to reduce the chances of being late and over budget as the project is progressing mid-way. Basically by making any what-if changes to an on-going project, an immediate result on how the change impacts the project can be observed within seconds and subsequently decision making can then take place without much further delay and with confidence.

81. One does not need to be a statistical expert or to have any prior knowledge of risk analysis theories to be able to perform a thorough risk analysis for a project by using the software available. They are used by project team members of all levels, from young engineers just entering the project risk management arena to the world's leading construction risk experts.

82. With such technology in risk management, one can conveniently peruse other parties' work programmes produced from project management software, such as Primavera Project Planner, SureTrak, FastTrack Schedule and Microsoft Project, to perform your own risk analysis for the similar project. This can simply be done by importing the work programme electronically into the risk analysis application, identify and allocate the uncertainties or risks for each tasks, proceed with the step-by-step instructions, and in no time, a risk analysis for the project would have been performed. This risk management procedure is very useful for owners and consultants to manage the contractors effectively so as to avoid unnecessary work disruption and claims.

83. Besides, technology allows project team members to contribute to the risk database with their own uncertainties or risks they could foresee in the project, identify the severity of the risks, analyze the impacts, and discuss ways to

mitigate the risks in a more effective and cooperative fashion as a team. Over time, the risk management allows the project team to build a more comprehensive risk database based upon their experiences and lessons learned, which will be useful for better management of future projects.

84. Results generated from the risk analysis are clearly presented in preformatted professional and easy-to-interpret templates (table, schedule, summary etc.) and charts (Gantt Chart, S-curve graph, histogram, etc) bundled in these software. Therefore, reporting is made easy to pinpoint and convey the risk impacts and mitigation recommendations to the management effectively. Some examples of the charts are attached in Addendum 5.

85. The tool is also considered useful for developer/owners in assisting them to assess likely risk impacts and likely success of mitigation or recovery plans for the contractors. It also serves as a management tool for likely impacts caused by developer/owner responsibilities such as design information delays or interruptions in a fast track project at parameters of the low and high levels, thus understanding the exposure, and the situations where the developer/owner must insist that no delays are forthcoming from the consultants.

86. Finally, this tool have been used by contractors to determine the likely risk events that would cause an overrun of the budgeted cost, the likely risk events that impact on LADs and therefore the likely risk event that will affect the profit margin hoped for. So risk on cost can likewise be simulated.

Common Variation Risk

87. The common risks in relation to variations include:-

- Situations where the design is still being developed or fast track design and project;
- Situations where the design may fail;
- Situations where the NSC's design has failed;
- Situations where there are ambiguities in Contract Document relating to the design;
- Situations where the contractor's work method or temporary work has been dictated and the design cannot be built;
- Situations where the contractor warrants quality and the effect of approvals by the developer/owner or the consultants;
- Situations where the contractual conditions precedent to an appropriate variation ie. a written variation order was not issued;
- Situations where the soil conditions become variable and effect the buildability of the design;
- Situations where there are uncertain or dis-advantageous valuation mechanisms in the conditions of contract.

Fast Track

88. Fast-tracking is a form of accelerated project delivery which also includes a project management approach geared to very rapid project completion to reduce the overall project life cycle time[18]. The contract for a fast-track project

[18] Adapted from 'Project Performance Best Practices – Applicability of US Standards in Developing Countries in the Caribbean Basin' LH Forbes, SM Ahmed and OA Barboz in 'Proceedings of the Third International Conference on Construction Project Management'

is awarded as soon as sufficient works have been designed and work commences on site even though the design has not been satisfactorily completed[19].

89. A fast track project may comprise of various types of variables:-

i. The total design is still not completed and settled at the time when the contractor bids and is to commence works; and/or
ii. A part of the design that is not critical to the initial stages of the construction logic remains incomplete;
iii. The design is completed but the authority approvals have yet to be obtained at the time of the bid;
iv. Turnkey structure but design concept not completed;

90. A fast track project may be unavoidable. In such an event, it is clear that a fast track project will lead to an extensive claim and cost escalation situation.

91. There are however methods by which a developer/owner may still control and manage what seems like at almost inevitable and unmanageable risk. These include:-

- The adoption of contractual structures such as partnering, turnkey or joint design turnkey or when part of elements of design not completed allow design by NSC or prime cost items;
- The adoption of pricing structures such as cost reimbursable plus profit or variables to the same or even BOQs providing expectation of increased quantities only. If BOQ is utilized, the contract will have to allow open-ended claims (loss and expense for other increased cost or

[19] Ir. Harbans Singh KS "Engineering and Construction Contracts Management – Pre-Contract Award Practice" at p.144

apply formulae to +/- % increases based on direct and indirect cost percentage from the original rate and allow extrapolation of rates for differing sizes of similar work items in the BOQ);

- Clause 25 of JKR Standard Form 203/1983;
- Risk to ensure that design or construction of the design would meet the authority's requirements or the bye-laws can be placed on the contractor but it must be clear and express in the conditions of contract. This is especially if it refers to some performance requirement of the design ie. fit for purpose[20]. It is arguable whether the contractor can seek an implicit or legal indemnity from consultant if design does not comply with consultant known requirements and contractor unknown requirements.
- If authority requirements have changed after the bid, then there can be a variation providing the contractor notifies and proposes the change in the drawings (ie. strict procedure as condition precedent). Clause 11(d) of the JKR Form 203, clause 4 of PAM98 and SIA 80-88 clause 7(1). Contractor in any event has duty to notify[21]. Interestingly, the claim for variation is only if since the bid, the authority requirements have changed. Therefore if the authority requirement never changed but was not complied with, arguably there is an element of design liability placed on the contractor;
- In a turnkey structure, if the contract condition is explicit about further expected design concept development and the developed concept was indicated in the tender concept drawings albeit briefly, then it is not a variation[22];

[20] Barratt Southampton Ltd v Fairclough Building Ltd [1988] 27 Con LR 62, London Borough of Newham v Taylor Woodrow Anglican [1981] 19 BLR 99
[21] Perry v Tendering District Council [1984] 30 BLR 118
[22] Skanska Construction Ltd v Egger (Barony) Ltd [2002] EWCA Civ 1914

Design May Fail

92. If during construction, the contractor has noticed that the design might fail, the question is then as to what is the contractor's obligations? The situation will be:-

- Contractor cannot refuse to complete the construction as the issue of the design failure still remains hypothetical especially if the consultants refuse to acknowledge it;
- The only right to stop further works is if the design fails before completion (again this tends to lead to dispute on whether it is workmanship that caused the failure)[23];
- Standard forms do not usually cover for situation due to design failure but see Clause 4.21 of AIA General Conditions [1976], Clause 20 FIDIC and ICE where contractor's is obliged to re-build but at owner's cost;
- No duty to warn unless expressly stated in the conditions of contract;

NSC's Design & WarrantyFailure

93. In a situation where and NSC's is required to design and construct an element (normally specialist element) and has accordingly contracted with the contractor under the nominated form, but the design has failed, the question is whether the contractor will be responsible for the risk?

94. In situations such as this, the owner must proceed carefully so that the owner does not lose out on the benefit of a warranty for fitness of purpose and quality from the contractor which is the contractual risk protection available bearing in mind that the owner has no direct contractual relationship with the NSC.

[23] Bentley v State [1889] 14 NW 338

95. A frequent argument by the contractor is that they were ‘left out in the cold’ in the sense that they :-

(a) did not have the right to object to the nomination of the NSC; or
(b) were not consulted on the design, selection, specification, quality of the NSC.

96. It is likely than when the design or workmanship fails, the contractor will argue that it cannot be liable to the owner under any warranty of fitness for purpose or quality in respect of the works done or materials supplied under a nominated subcontract.

97. The uncertainty in the liability process arises from 2 rather seemingly contradictory decisions but decisions that in the end seem to have a common legal policy:-

- In ***Gloucestershire County Council v Richardson [1968] 2 All ER 1181,*** it was specified in the contract that a particular construction material was to be supplied by a particular firm (nominated supplier). That firm had limited their liability for defective goods. It later transpired that the material was defective. The House of Lords held that the contractor had been freed from warranting the quality or fitness for purpose of the material because at the time of deciding on the supplier, the contractor had not been given the right to object to the nomination (note that the supplier had a limitation of liability vis-à-vis the contractor).
- In ***Young and Marten Ltd v McManus Childs Ltd [1968] 2 All ER 1169*** where the indirect nomination (specified the type of material only available from one manufacturer) came from a contractor to its sub-contractors and when the material was discovered to have inherent defects, the sub-contractor argued that they were not liable since the

contractor had selected the materials. The House of Lords held that there was an implied warranty of quality from the sub-contractor because the sub-contractor had the benefit of the warranty from the manufacturer. The House of Lords conceded that their decision would have been different had the manufacturer sold the material to the sub-contractor with a limitation of liability for defects and this limitation was known to contractor.

98. Both the decisions clearly seem to have been dictated by a policy decision that if there is an indemnity which can be enforced by the contractor against the nominated party, then the contractor will be held liable. Otherwise, the issue or reliance on the contractor's judgment or input is brought into the consideration.

99. The risk of losing the contractor's warranty generally can be avoided if the owner ensures that:-

- the contractor is already appointed prior to the nomination or selection of the NSCs;
- the contractor is given information on the NSCs
- the contractor is involved in the decision making process in determining the choice of materials, quality, specifications and sub-contractors, if possible;
- the contractor is given the right to object to the nomination of the sub-contractor or supplier;
- the nominated supplier or contractor has not excluded or limited his liability in respect of the quality or fitness of the materials or the design. Therefore the owner must dictate the indemnity provision in the nominated sub-contract or supply contract;

Ambiguity or Uncertainty in Contract Documents

100. The ambiguity in concern leading to variations is normally in respect of the Contract Documents that describe the scope of works and set out the design to be built.

101. There are a few methods employed commonly in conditions of contract that attempt to mitigate this particular problem of ambiguity or uncertainty due to lack of information, bad language or discrepancies.

102. A common feature in conditions of contract that caters for a lack of information in the drawings or specifications is the "indispensably necessary" clause, also known as the "inclusive" or "contingently necessary" clause.

103. These clauses not only deal with all temporary works required to construct and build the design but also is intended to and is construed as covering the minor detailing aspects of the permanent design. It is commonly construed as also covering works not priced separately but can be inferred or interpreted from the contract documentation as a whole[24].

104. These clauses arise especially as there is an appreciation that the entire detailing and extent of the design, can never be expected to be captured in writing and drawings. It is also understood that a reasonable contractor, upon sight of the design as evinced in the Contract Documentation, will understand what other details of the design is expected without needing further information.

[24] Bryant & Sons v Birmingham Hospital Saturday Fund [1938] 1 All ER 503, Farr v Ministry of Transport [1965] 5 BLR 97

105. The other method is to employ a clear and precise express provision of priority for the various Contract Documents construed as binding by the courts[25]. The courts have generally however been reluctant to allow a printed standard form conditions of contract to take priority over other party prepared documents unless the standard form is absolutely clear[26]. This principle is also applicable in Malaysia[27].

106. There is also normally a requirement for the contractor to raise discrepancies discovered but the effect of irreconcilable discrepancies is that instructions that can amount to variations will have to be issued. Of course the priority of documents clause does help if the discrepancies are discovered in differing documents but it is of no help if discovered within the same document.

107. If the discrepancies are reconcilable, then the only effect may be delay. Note that a contractor does not have a duty to look for discrepancies unless the standard clause is drafted to express such an obligation.

108. Clause 14 of the SIA standard form does try to deal with the distinction of reconcilable and irreconcilable discrepancies.

Interference with Temporary Works or Work Method

109. The general position is that a contractor is responsible for his construction method[28]. He has the freedom to choose the work method best suited to construct the design. By tendering for the project, the contractor is deemed to be warranting its ability to carry out and complete the construction of the design as seen in the drawings and specifications. This is commonly referred

[25] Gold v Patman & Fotheringham [1958] 1 WLR 697
[26] Glynn v Margetson [1893] AC 351, English Industrial Estates Corp v George Wimpey & Co Ltd [1973] 1 Lloyd's Rep 118
[27] Bank Bumiputra Malaysia Bhd Kuala Terengganu v Mae Perkayuan Sdn Bhd & Ors [1993] 2 MLJ 76
[28] For example, see clause 2(1) of the SIA Form of Contract

to as the buildability warranty. This principle has been accepted in most commonwealth jurisdictions[29] and the USA[30].

110. The developer/owner or its consultants are not deemed in law to have warranted the practicality or buildability of the design. The developer/owner does not have a duty to ensure and maintain the most economical construction process or method for the contractor.

111. As such, it is usual for the contractor to be left to determine its own work methods and temporary works (ie. the buildability aspects). As such, the risk of being able to fulfill the buildability of the design is with the contractor and if later the contractor has to employ far more complicated and expensive construction technology to build the same, that would essentially be the contractor's responsibility[31].

112. However, there are some standard form conditions of contract that allow the contractor to seek loss and expense if the buildability is found to be practically difficult and requires a change of construction method or technology. These conditions of contract apply the foreseeability principle in the allocation of construction risk[32]. This is especially the case with unforeseeable soil conditions.

113. The position however alters when the Contract itself specifies or dictates the work methods or temporary works or elements of it. In such a case, the work method or temporary work effectively becomes incorporated as a contract term and if it later transpires that the work method or temporary work cannot be

[29] Tharsis Sulphur & Comp Co v McElvoy & Sons [1878] 3 App Cas, Thorn v London County Council [1876] 1 App Cas 120, Steel Canada Ltd v Willand Management Ltd [1966] 58 DLR (2d) 595
[30] Lonergan v San Antonio Loan & Trust [1907] 104 SW 1061
[31] A Jac Demolition (London) Ltd v Urlin-Rent-A-Car Inc [1990] 74 OR 2nd 474, Carman Construction Ltd v CPR [1982] 136 DLR 3d 1983
[32] Clause 12 ICE 1973

carried out, the contractor is relieved of his obligation to use the specified method. A variation order then becomes necessary[33]. Quite apart from exposing the employer to unnecessary cost overrun by virtue of potential variations, a contract clause that entitles the owner/consultant to dictate the work method may attract higher tender prices due to the loss of control by the contractor over his work method.

114. Sometimes there is little choice but to have some degree of influence over the construction method or temporary works. Some projects have elements of specialist type designs whereby some elements of the method of construction becomes a factor of the permanent design. Examples include the construction of cable stay bridges where numerous temporary work elements such as the concrete mix, the length of curing of segments, the time of day of the decking works and the method of decking will all affect the overall movement of the bridge post construction and the consultants will try to balance these factors in determining the parameters for the bearings whether horizontal or uplift. Some temporary works are sometimes left with the permanent works such as sheet piling, cofferdams or permanent shuttering for concrete. If any of these temporary works is to be a factor in the structural integrity of the permanent works, then clearly it will be dictated by the Contract and the owner/consultants.

115. There have been moves to define and therefore to manage any intrusions onto the contractor's work methods or temporary works within the conditions of contract. FIDIC and ICE (clauses 53(2) and 33 respectively) have defined temporary work as being such work that can be removed upon completion. It

[33] Yorkshire Water Authority v Sir Alfred McAlpine & Son (Northern) Ltd [1985] 32 BLR 114 – where the method statement specified the digging of a tunnel upstream but this method was found impossible to perform. The tunnel thus had to be dug downstream. The Court had held that under clause 13(1) ICE, the digging of the tunnel upstream was a physical impossibility which entitled the contractor to a variation order.

is uncertain in the face of known situations where the temporary work cannot be removed but are not part of the structural integrity of the permanent works, whether the definition is to be considered satisfactory.

116. If the work method or the temporary works are prescribed by the Contract, then the contractor must abide by the same unless proven impossible[34].

117. That could however be a provision under the Contract that allows an argument that the contractor may still be responsible for the method of construction or temporary works prescribed under the contract. This is by way of the provision requiring the contractor to analyze the method of construction or method prescribed and to warrant its usability for the construction of the design. However such a contract provision would have to allow the contractor to suggest alternative if it is to be workable.

118. It would serve the owner and its consultant well to leave the construction method to the contractor whenever possible. The contractor's normal obligation is to complete the work by whatever method is found to be necessary and this is included in the contract price.[35] This coupled with the contractor's usual warranty that the method he has proposed is workable leaves little room for any uncertainty that the contractor is obliged to propose and carry out a suitable construction method to complete the works. Any liability in the event that the work method cannot be carried out will be borne by the contractor.

119. It is never the duty of the owner or consultant to assist or give instructions on the method of construction or temporary works when difficulties arise. There are particular standard forms conditions of contract that expressly state this

[34] Yorkshire Water Authority v McAlpine Ltd [1985] 32 BLR 114

[35] The JKR Form 203 and [PAM Conditions of Contract 1998] do not contain comparable clauses.

principle[36]. In Clause 13 of FIDIC, it is expressly stated that the consultant or owner has no duty to advise the contractor on building operations, no duty to prevent the contractor from making errors or mistakes and the contractor is liable to complete unless physically impossible.

120. This principle of no duty to assist has however one limitation under common law, which is where the design is proven as impossible to build[37].

121. The drafters of the ICE Contract sought to address this by inserting clause 51.1 which gives the Engineer the power to order a variation in the event of a legal or physical impossibility[38]. This clause was the basis of the English Court's decision in the case of Yorkshire Water Authority v Sir Alfred McAlpine & Son (Northern) Ltd [1985] 32 BLR 114. This decision has been criticised as the Court gave a doubtful interpretation of the clause by translating the Engineer's power to order a variation (in cases of physical impossibility) into a duty to order the variation1. It is submitted that the clause does not support such a wide interpretation.

122. There is also no duty to the consultant or owner to safeguard the contractor from any economical loss by making the design easy to build or easy to protect[39].

123. However if the design is so faulty that it makes it impossible to protect, then the contractor may have a valid excuse[40].

124. In the USA there seems to have been a different approach especially to public sector projects arising from government contacts which attempted to prevent

[36] Clauses 2.2.4 and 2.2.13 of the AIA General Conditions 1976
[37] Clayten v Woodman & Sons (Builders) Ltd [1962] 2QB 533 & 1WLR 585
[38] See Hudson's Building and Engineering Contracts 11th Ed at p.897
[39] Edgeworth Construction v Lea & Associates & Baxter [1990] 1QB 993
[40] Oldschool v Gleasons [1976] 4 BLR 103

claims on time related delay cost due to variations, where the courts have pronounce that there is an implied obligation or warranty given by the government in all contracts that if a contractor follows the specifications and design strictly he can complete on time. As such if later the specifications and design prove to be impossible to complete within the time frame, the contractor is entitled to a claim for loss and expense[41]. The US courts have maintained this implied obligation of the government despite exclusion clauses or clauses requiring contractor's own investigation in the contract.

125. Despite strong policy reasons in the US, the UK position has been preferred simply because the owner should be left concentrate on the permanent works and the ability of the permanent to meet its use whilst the contractor should be left concentrate on finding the most economical and efficient work method that can be employed at the site so as to price the tender competitively. This is the same for temporary works.

126. There may be cases where the work method may not have been incorporated into the contract but a proactive consultant renders advice to the contractor or asserts a strong influence on the work method especially when problems arise, in the interest of the project.

127. There have been instances where the courts have found a proactive consultant who gives instructions on work methods or temporary works to resolve a situation arising at the site raised by the contractor may be effectively instructing a variation[42]. There are also decisions where consultants had been held liable for failing to realize errors in contractor's calculations or design

[41] Labournum Construction v US 325F 2d 451 [1963]
[42] Gloucester CC v Richardson [1969] 1AC 480

(even in turnkey contracts) especially where consultant's agreement with the owner suggest that the consultant was to ensure no such errors would occur[43].

128. There have been other decisions of the courts which suggest that where the consultant is seen to have made a joint decision on the solution by way of change to the work method or temporary works[44], or is seen to have given directions honestly without intention to create a variation and the contract allows for such direction[45], then the instructions will not be deemed a variation.

129. There has however been a recent decision which states that if a solution is given by the consultant resulting in a change to the work method or temporary works and this solution was given in the best interest and for the advantage of the owner, then it will be deemed a variation[46].

130. This clearly raises a problem with conduct at site. Consultants are only expected to be proactive in resolving problems whether relating to design or the contractor's temporary works or work methods with the obvious intention that the project will never suffer. This positive approach however leaves the owner exposed to variation liability for temporary works or work methods for the contractor where the owner was never liable or responsible in the first place.

131. The suggested solution to this risk exposure is to have either an exclusion clause for the conduct of the consultants which do not relate to permanent works or design or alternatively define variation works as only those limited to permanent works with an exclusion for common law claims.

[43] Demers v Dufresne Engineering [1979] SCR 146, Cable Ltd v Hutcerson [1969] 43ALJR 321
[44] Pearce (CJ) & Co v Hereford Borough Council [1968] 66 LGR 647
[45] Neodox Ltd v Swinton & Pendlebury Borough Council [1958] 5 BLR 34
[46] Williams v Roffery Bros [1991] 1 QB 1

132. Without a suitably worded exclusion clause in the contract, such advice and interference in the work method can render the employer responsible for the failure of the work method. It is important that consultants be educated on the danger of offering proactive advice and the consultant be taught to preface their instructions or advice on contractor risk or contractor responsible problems with the words "without prejudice basis".

Contractor's Warranties & Approvals

133. During the project, the contractor may be asked to prepare shop drawings showing the installation details (amongst others), and at times these drawings could include elements of pure design or permanent work elements especially where there is some a partial design obligation passed onto the contractor or an NSC[47].

134. Wherever the contractor is allowed to make a freedom of choice on items like the temporary works or materials etc, they come along with implicit absolute warranties. There can be even materials specified under the Contract but when the contractor is allowed to exercise a judgment on elements that makeup the materials such as the pre-mix for concrete, then the contractor implicitly warrants its suitability[48].

135. In order to ascertain whether there are warranties, there has to be reliance placed on the contractor but this reliance need not be exclusive as long as it is substantial[49].

[47] Holland Hannen & Cubbitts v WHTSO [181] 18 BLR 80
[48] Duncan v Blundell [1820] 3 Stork 6, Cammel Laird v Manganese Bronze Brass Ltd [1934] AC 402
[49] Laminated Structures v Eastern Woodworkers Ltd [1962] 32 DLR (2d) 1

136. Even where the specifications may dictate the equipment to be supplied by the contractor but if the performance of the chosen equipment is left to the dictates of the contractor, there can be a warranty[50].

137. Contractor's tend to argue that there are no warranties arising from the owner's/consultant's approval of the material or equipment etc. This argument also extends to matters arising from shop drawings.

138. It would therefore be more certain if there was an express condition within thee contract which provides that the owner's or consultant's approval of contractor's risk items does not relieve the contractor of its warranties.

139. If contractor recommends the use of materials or nominated sub-contractors/suppliers, then even if the owner or consultant accepts the recommendation, the contractor still is deemed to have warranted the suitability of the material of NSC[51].

140. However wherever there is a requirement that only materials for which samples have been provided and approved by the owner/consultant does relieve the contractor of its warranties as the owner/consultants are seeking to satisfy themselves with no reliance on the contractor[52].

Variation Orders

141. Commonly, all standard conditions of contract require a written order for variations as a condition precedent to a contractor's right to claim cost and any other loss and expense. Whilst many standard conditions also allows the contractor to confirm oral instructions on variations, it is not the form of

[50] Steel Company of Canada v Willard Management Ltd [1966] 58 DLR (2d) 595
[51] Martin v Mc Namara [1951] QSR 225, Stewart v Reavell's Garage [1952] 2 QB 545
[52] CCH v Mollenhouer [1974] 51 DLR (3d) 638

instructions that generally becomes an issue of dispute but instead it is generally whether an item of work carried out is a variation that is recognized under and can be compensated under the conditions of the contract despite the non-existence of the formalities required pursuant to the conditions of contract.

142. A consultant is not conferred an inherent or implied powers to instruct variations. The right to instruct variations must stem from an express provisions of the contract and where the provisions stipulate that it must be in writing, then it must be duly complied with, failing which the variation technically will have no effect and the contractor will not be under any obligation to comply with the same.

143. In history, there have been owners that have tried to avoid liability for variation claims by relying on the fact that the consultant who instructed the variation without ensuring the formalities were complied with, were therefore unauthorized by the conditions of contract to do so and their conduct is not binding on the owner.

144. Due to this particular problem, some standard form conditions of contract provide for owner/consultant sanction of variation work after the contractor has already carried out the work. Therefore, if the sanction is wrongfully refused post event, then the contractor is excused for having carried out the works without the written formalities and the owner is not allowed to hide behind its own breach (or breach of its agent, the consultant) to avoid liability.

145. There has been legal reaction to any avoidance of liability by reliance on the non-existence of condition precedent formalities that are wholly within the control of the owner/consultant. The Courts have generally been unwilling to allow an owner to avoid its liability where the variation is shown to have been

instructed by the owner/consultant and carried out by the contractor albeit without compliance of the formalities. They legal basis for evading the need for the condition precedent formalities are:-

- If the consultant has instructed the variations but without following the formalities and it is shown that the instruction is done in good faith and for the benefit of the project and owner (ie. it was necessary), then there is liability;
- If the court or an arbitrator has the power to replace any judgment of the consultant or owner in refusing to recognize a variation work, then the formalities are irrelevant[53]. This power is normally expressly provided to the arbitrator (power to reopen, review and revise) in the standard form arbitration clauses and it has now been deemed to be inherently within the courts powers as well[54];
- Wherever it has been possible to construe an ambiguity to the formality condition precedent requirement in the conditions of contract, they have been read in favour of the contractor[55];
- Where the owner knows of the variation work and can be seen to have not prevented it but in fact encouraged it, then it is an implied variation required by the owner which is not constrained by the contractual formalities[56];
- The conduct of the owner/consultant leading the contractor to believe that the formalities were waived[57];

146. There now is very little room for the owner to avoid liability for variations instructed without adherence to the formality compliance, perhaps only in

[53] Brodie v Cardiff Corporation [1919] AC 337
[54] Beaufort Development Ltd v Gilbert-Ash NI Ltd [1998] WLR 860 accepted in Bina Jati Sdn Bhd v Sum-Projects (Bros) Sdn Bhd [2002] 2 MLJ 71
[55] Diamond v Mc Annay [1865] 16 Up Can CP 9
[56] Re Chittick & Taylor [1954] 12 WWR 653
[57] Meyer v Gilmer [1899] 18 NZLR 128

cases where the owner is oblivious to the instruction and the variation works and it is conclusively proven that the variation works were not necessary or required for the projects and thus non-beneficial. This will lead to an inference that the instruction was in fact for the benefit of the contractor.

147. Clause 1(8) of the SIA Contract departs from the usual standard form contracts by expressly providing for a contractor to be paid for variation work orders which were issued beyond the stipulated powers of the consultant. This is in recognition of the principle that an owner ought not to be allowed to take advantage procedural defaults of its own consultant. The clause however has a saving for ultra vires orders in respect of variations necessitated by the contractor's negligence, default and defective works. In such cases, the contractor is not entitled to payment.

148. In fact, the SIA contract has come up with a definitive ways of dealing with the uncertainty of instructions as a whole. Clause 1(2) of the SIA Contract refers to orders to carry out variation works as 'instructions' whilst work orders falling within the existing scope of contractual works is referred to as 'directions'. Directions do not entail additional payment to the contractor whilst an instruction would (subject to clause 12(5) (b), (c) and (d) SIA elaborated below).

149. Under the SIA concept, if the contractor disputes any particular 'direction' as being in essence an instruction, the contractor must issue a notice of his objection within 28 days of the issuance of the direction[58] failing which he will not be entitled to refer the same to arbitration.

[58] Clause 1(5) SIA. There is no comparable clause in the JKR Form. All instructions, whether falling within the scope of existing work or variation orders fall within the purview of clause 5 – S.O.'s Instructions.

150. The SIA Contract also expressly stipulates the types of variations which do not entitle the contractor to additional payment. These variations are generally those resulting from the contractor's own defaults, defective works or where the temporary works are unsafe.

151. If there are no express powers within the conditions of contract to instruct variations after the CPC, then any such instructions and performance can be argued as not within the contract and therefore entitle the contractor to seek market rates or actual cost[59]. Alternatively, if the contractor excepts such an instruction as a valid instruction within the contract, it will render time at large and discharge any previous deductions of LAD by the owner[60].

152. Whenever variation are instructed but not in accordance the formality required under the contract, there is great uncertainty on the part of the contractor as to whether he should proceed with the works despite the lack of formality. If the contractor chooses not to proceed with the works and therefore refuses to proceed until formally instructed, the contractor runs the risk of the refusal being considered a repudiation leading to a termination of its employment[61]. Therefore at the stage where there is an instruction without formality for work which is believed to be variation works, the contractor must make the decision and the present position in law and possibly if the conditions of contract are also supportive, the contractor can proceed with the works and raised the argument for recovery of the cost at a later stage.

153. Such type of variations instructions, amongst other types of instructions which on the face of the instruction does not seems to require variation work but effectively does so (instruction on correction of discrepancy in contract documents etc) are commonly referred to as "constructive change/variation".

[59] Saddler v US 287 F (2d) 411
[60] B alfour Beaty v Chestermount Properties (1993) 62 BLR 1
[61] Peter Kiewit v Ealing Construction [1960] 22 DLR 465

154. Because constructive change/variation originates from owner and it is the contractor that suffers its effects, the contractor has to manage this risk so as to minimize its loss. The contractor should carried out the following steps in order to make it possible to recover the cost of the constructive change/variation and any other cost arising therefrom:-

- The contractor should research the contract documents thoroughly to confirm that a change condition actually exist;
- The contractor should prepare and submit a request for formal instructions giving the consultant a clear and detailed description of the change;
- The contractor should provide notice of any likely effect on progress and on the completion of the project;
- The contractor should provide notice of any likely effects on preliminaries;
- The contractor should give notice of an intention to proceed to adjudication or arbitration if the formal instruction on variation is not forthcoming;
- The contractor should put together a dispute file documenting the factual background and all responses or lack of them from consultant and owner;
- The contractor should inform the consultant of the need for any prerequisite determination by the consultant of the issue before adjudication or arbitration;
- The contractor should update its notices on the effects of time and cost as the variation work proceeds;
- It is obvious from the above list, that the contractor should proceed with the variation works despite the dispute.

155. From an owner's point of view, the owner can avoid the inconvenience of constructive change/variation disputes by:-

- Giving the design team sufficient time to carry out adequate research and to prepare a complete designs before tender;
- To accept that no matter how well thought out, there will be certain design changes required with the benefit of hindsight. Therefore the owner should just accept situations of constructive change/variation and instruct the consultant to issue the formal requirements so that the pricing element within the contract for variation can be activated;

Soil Conditions

156. Unforeseen soil conditions are one of the major likely dispute areas within the risk allocation determinations. There ought to be a realization that whatever information is at hand, the soil conditions could get worse than previously detected arising from rising water table, flooding and land slides.

157. The owner / developer must realize that allocating the risk of unforeseen soil conditions to the contractor will likely cause the construction cost to escalate and that the completion period may not be achieved by lack of proactive actions by the contractor who is left to resolve the soil problem with its own funds. Therefore the owner should consider alleviating this risk from the contractor by introducing a re-measured price structure, a special rate for excavation of rocks and/or contractor suggested alternatives substructure design.

158. On the other hand, if the owner is keen to pass the risk onto the contractor, then owner must ensure that the contractor is not only deemed to have knowledge of the site conditions, but in fact has actual knowledge of the same

as far as possible so as to minimize the risk of soil conditions delaying and crippling the project itself.

159. The owner should firstly ensure that all possible information it possesses (and there is no reason why good quality information on soil conditions should not have been obtained) is provided to the contractor so that the contractor can make a considered decision on schedules and processes. In fact the owner has a common law duty not to conceal information that is known to it and which will effect the contractor. However, all owners would be wary of the effect of the representations made vide the information given.

160. There can be an exclusion of liability for the information given by not only addressing the lack of warranty as to the accuracy or veracity of the information given but also requiring the contractor to carry out its own investigations and deeming that it has done so. These type of exclusions of liability or disclaimers have been accepted by the courts[62].

161. A word of caution however to owners that believe such clauses or provisions in the contract will avoid any form of liability. If the contractor is indeed not given enough time in the tender process to carry out its own investigation or access to the site is in fact deprived, then such clauses will not work and the contractor will be considered reasonable in relying on the owner's information regardless of the accuracy or veracity. A claim can then be mounted if the information turns out to be inaccurate.

162. However, for the benefit of the project, the owner should insist on the short listed tenderer's carrying out some form of site investigation as required. It would the be additional comfort to the owner to realize that the soil profile

[62] Re Nuttall & Lynton & Barnstaple Rly [1899] 82 LT 17

does or does not resemble the information at hand and the issues arising out of differing soil conditions can be addressed beforehand.

163. The owner should also ensure that the specialist sub-surface contractor is allowed to suggest an alternative design to suit the soil conditions whilst ensuring that the same suits the entire design. This then allows the specialist contractor to undertake design responsibilities as a turnkey and it also allows the owner to obtain the best price for such an obligation (ie. based on the already agreed price) arising from the contractor's own need to solve the soil condition problems.

164. The owner should however ensure that any method statement of construction or work process or new sub-surface design that is related to the soil condition is not deemed part of the contract documents or that any approval of the same is not construed as binding on the owner (not a warranty of the usability).

Valuation of Variation – open ended

165. Most standard form conditions of contract provide that if the parties can agree on the valuation of variation works, then that will be binding.

166. If a price cannot be agreed, then the conditions of contract usually provide for various methods of valuation applicable and binding on the parties.

167. In re-measured contracts, the normal method is to allow for valuation using the BOQ rates and for lump sum contracts, the schedule of rates. However, it normally limits the utilization to variation works within the BOQ or works of similar character executed under similar conditions and as such, whether the variation works do qualify will be a question of fact. Conditions do not

merely mean physical conditions but include the timing of the variation order[63] and extent of the varied work. Similarity of conditions extends site space or work areas, sub-surface conditions and weather conditions (generally becomes an issue in seasonal weather conditions, and should be applicable to the east coast of Malaysia).

168. The other method of valuation normally prescribed will be for instances were the variation work is not of a similar character or carried out in similar conditions to the works already specified in the contract. The varied works are valued on adjusted rates using the BOQ or schedule of rates as a guide. This uncertain provision employed in the JKR 203 Form tries to import the usage of "where reasonable", which effectively creates more dispute.

169. There should be provisions that allow the extrapolation techniques to be used for work carried out under similar conditions but which may not be of similar character. Duncan Wallace QC did propose a fair variation valuation method, which compensated for the indirect cost by firstly requiring the contractor to provide the makeup for the rates in the BOQ or the Schedule of Rates and then utilizing the same in valuing variations. The learned QC was given a free hand in drafting the first SIA conditions of contract and he imported this idea within the SIA structure. See clause 1(3), 12(4) (a) & (b) and 12(5) (d).

170. If such a structure is utilized and required of the contractor then the same can be used in the extrapolation technique to compensate for the indirect cost elements whilst direct cost can be made up of actual cost with substantiation for materials and day-work rates agreed on previously for plant and labour.

[63] For instance, where the variation is issued after the required activity had already been completed and plant and labour demobilized.

171. There needs to be certainty with any approach of valuing variations, which can be deemed binding on the parties.

172. Many conditions of contract provide that if the BOQ or the Schedule of Rates cannot be reasonably used, then the fair valuation is to employed. A fair valuation has been defined to be a valuation guided by the prevailing market prices, with an allowance for overheads and profit[64]. Here again the issue of how one determines the contractor's overheads and profits applicable to an item of work or a unit rate leaves much to be desired. The SIA method of requiring the make-up of rates allows some assessment of these other elements in the cost and therefore can be accepted as the best evidence in coming to a valuation.

173. If there are no conclusive methods of computing the indirect cost elements of the variation works, then the contractor will be faced with costs that cannot be compensated and this would then be construed as unfair. Therefore there is a tendency in standard form conditions of contract to allow the contractor to claim for loss and expense if it can be proven that the valuation method employed in the contract does not totally compensate the expenses incurred. This is what is referred to as an open-ended valuation[65].

174. It is then left to the provisions on a prescribed period of notification for this additional cost under any condition precedent provisions relating to loss and expense so as to allow the developer/owner the right to consider any possible mitigation of the cost. It is however doubtful whether a condition precedent can be effected against a claim for additional cost incurred due to a variation as the contractor is unlikely to know that it will be additional until he has

[64] Weldon Plant Ltd v The Commission for the New Towns [2000] BLR 496

[65] Clause 5(d) JKR Form 203, clause 24.1 PAM Conditions of Contract (1998)

expended the cost and obtained a valuation for the variation. Therefore the facts may prevent any assertion by the owner/developer of a condition precedent notification requirement simply because it would have been impossible to perform.

175. It should be noted by draftsmen that the contractual loss and expense procedure is not an exhaustive remedy for the contractor. Although the conditions of contract may be silent on the parties' common law rights, a contractor is entitled to make a claim for any loss and expense under the common law Hadley v Baxendale damages rule[66]. In accordance with the common law contractual principles, the contractor must be able to show that the developer/owner was in breach of its obligations[67].

176. There is debate over whether a party can claim a higher compensation under common law (albeit legally entitled) in comparison to what is prescribed under the conditions of contract for the valuation for variation works. It is normally left to the Court's interpretation as to what the parties intended and therefore limitative express words used in the variation clause can be construed as effectively a limitation of liability.

177. However, to make it certain, if it is the intention of the developer/owner to make the contractual loss and expense claim the sole remedy under the contract, then an express exclusionary provision of the common law rights must be inserted in the conditions of contract.

178. The other issue that arises in respect of valuation of variations is when there has been extensive variations introduced and the contractor seeks to avoid the rates in the BOQ or Schedule of Rates altogether.

[66] London Borough of Merton v Stanley Hugh Leach Ltd (1985) 32 BLR 51
[67] Also permissible under section 74(1) of the Contracts Act 1950

179. There has been a principle of law established by the USA courts that is referred to as "the Cardinal Change theory"[68]. This theory propounds that if the changes are so cardinal that it no longer resembles the works that were bid, then the agreed prices do not apply and the outcome is that the contractor can effectively argue a contract based on reasonable rates or alternatively a quasi-contract with a right to quantum meruit.

180. There is debate again over whether this principle ought to be applied. It has been applied in some commonwealth jurisdictions such as Canada[69] and New Zealand[70] but it has been rejected in the UK mainly because of the existence of the non-vitiating of the contract clause arising from variations which is a standard term imported into many standard form conditions of contract[71].

181. There is however the possibility of a far more serious effect of multiple variations which is:-

- That it may amount to a repudiation of the contract;
- Does it amount to a misrepresentation that goes to the root of the Contract allowing a rescission?

[68] Smith v Salt Lake City 104 Fed Rep 457 (1900)
[69] Watson v O'Briane 7 UP Con QB 345
[70] Meyer v Gilner [1899] 18 NZLR 129
[71] Blue Circle Industries Plc v Holland Dredging Co [1987] 37 BLR 40

Managing Variation Risk – Documenting the Cause

182. Risk management begins where risk allocation ends, and the techniques need to be applied even before the tender is opened for bidding. The process of risk management techniques is normally divided into 5 stages of a project's lifespan beginning with the pre-tender stage right up to post-completion[72].

183. As with any contractual relationship, it is critical that the contract administration team understands implicitly the terms of the contract. The contract is the first reference point for guidance on how variations may be issued, when they may be issued, how they should be issued and limitations on issuing the same.

184. There must be a comprehensive clarification process on both sides pre-tender on the work requirements and post tender on the tenderer's bid.

185. A careful record of all discussions should be kept and agreed during this process, as very often the extent of the technical uncertainties, ambiguities and risk that have been considered and discussed pre-award is often a mystery. All correspondences that pass between the owner, consultant and tenderer during this period should also be kept. A design and workmanship brief is then prepared using this information so as to assist the determiners and decision makers at the later stages whether at site or at a dispute resolution forum.

186. A schedule summarising all changes resulting from negotiations should be kept as with minutes of meetings between the relevant parties signed by the parties present. Important things to note within the minutes are the

[72] Adapted from The Management of Change Within Construction and Engineering Contracts by Mark Castell in the Trett Digest Issue 31

information that was given to the tenderer to enable him to make any price adjustments and the changes that have been agreed to by the parties.

187. The owner must also look out for inconsistent pricing within the tender stemming from the contractor's practice of rate-loading. A quantity surveyor should check the rates quoted and recommend reasonable rates, which must then be put up to the contractor for his acceptance.

188. Where applicable, owners should obtain detailed breakdown of prices quoted in the schedule of rates to keep a check on unfair pricing strategies and facilitate the valuation of variations[73].

189. There is a tangible advantage to using special conditions rather than exhibiting bulk tender correspondence and minutes of meeting to supplement the contract terms as the preparation of the special conditions focus the owner's mind on cutting out conflicting provisions and ensuring homogenous marriage of the standard form conditions and the additional terms.

190. Parties should take special care to include all the agreed changes to pricing, scope of works and division of responsibilities between them so that no ambiguity arises when construing the contract with the pre-contract documents.

191. A careless inclusion within the Contract Documents of all post bid documents and drawings which were never given to the contractor in his bid process, can lead to drastic cost consequences later, when decisions are required as to whether an item of work is a variation. Both parties should scrutinise and verify the individual documents forming the contract documents prior to award.

[73] Clause 5(1) of the SIA Contract

192. During the contract administration stage, everything boils down to the administration team monitoring and keeping meticulous records of parties' fulfillment of their obligations and updating changes in real time.

193. Documents such as the design and construction programs, progress reports, drawing release dates and approval schedules must be constantly updated so that reliance on the information contained therein does not become obsolete in the event of litigation later down the road.

194. Deadlines for issuing notices and variation orders must be monitored and implemented.

195. Once practical completion is achieved, an owner must be careful not to issue further variation orders as this would immediately render time at large. If the owner has already accrued a right to LAD, then a variation order post-completion would totally destroy his entitlement to LAD.

196. Where the variation work has already been carried out, the owner may issue a retrospective variation order to regularise the paperwork but where the work has not been carried out, a belated variation order will adversely affect the extension of time the contractor is entitled to and defeat the owner's right to LAD if it has already accrued.

Delay Risk and Events – Proving the Cause to Effect

Notice Requirement and Mitigation

197. In all standard form conditions of contract, there is normally a provision for notices of delay events or delay risk to be given by the contractor when it occurs. There may be variances in these clauses as to the time frame and the content of the notices.

198. However, the notices are the backbone of the contractors 1st step in proving the existence of delay events occurring at the site. It is also the backbone of the risk management process that ought to be practiced both by the contractor and the owner when delay events occur namely the mitigation plans or processes available to reduce the effect of the delay events and therefore time as a whole for the project as well as the cost.

199. The standard notice requirements usually emphasize on delay events that effect the completion of the project but not merely the progress of the contractors works. They also do not require notices for anticipated effects.

200. It should be realised that delay events which are not risk allocated to the contractor, may very likely result in a claim for disruption causing loss of productivity or efficiency even if it does not effect time in the sense of the complication date of the project. Therefore requiring notices on any delay events that may affect the progress of works and not merely the completion of the project would also allow the owner to monitor and suggest mitigation plans for the productivity claims that may ensue.

201. An example of a wide notice requirement clause can be seen in clause 12.2 of the MPF standard form of contract.

202. If delay is to be managed effectively, the notice provisions ought to be made wider so that an owner/consultant can gauge whether there is truly a delay event for which the owner would be liable based on the allocation of risk (owner caused delay events would be clearly covered but other delay events not within the control of either party will be determined by the EOT provisions in the contract) has occurred, the effects of the delay events and the possibility of mitigating the effects through processes within the control of the owner/consultant or even processes that were available to the contractor.

203. In that respect, mitigation of effects which result in damage or losses is in any event required under common law but only reasonable steps which are feasible and do not cause a serious financial impact would be the standard required. This applies to both cost and time[74].

204. There have been various debates on how far the common law duty to mitigate is to be imposed but eventually the courts seem to have settled on the following principles:-

- It is not a duty to mitigate loss but the extent of liability on the part of the other party that is reduced because a defendant can only be liable for such part of the plaintiff's loss that has been probably caused[75];
- The extent of the mitigation required is a question affect and not law[76];
- The limitation to the extent of mitigation is "reasonable steps"[77]

[74] British Westinghouse v Underground Electric Railways [1912] AC 673
[75] The Solholt [1983] 1 Lloyd's Rep 605
[76] Payzu v Saunders [1919] 2 KB 581
[77] British Westinghouse v Underground Electric Railways [1912] AC 673

- There is no need to embark on a uncertain or risky step in mitigation or one that may cause a loss of reputation[78]
- The owners is on the defendant to proof the failure to mitigate[79]
- Any cost incur on embarking on a reasonable mitigation process will also be recoverable against the defendant[80]

205. Interestingly in a case in the USA, the courts suggested that a delay event that could have been avoided by the contractor essentially is then converted to a contractor risk event[81].

206. If mitigation is expressly provided for under the conditions of contract (which is ought to) then the standards of contractual mitigation can be set-out in the conditions of contract and may be far greater than deem reasonable under common law.

207. Most standard forms conditions of contract seems to prescribe a requirement for the contractor to prevent delay rather than mitigate the effects of the delay. However there are standard forms such as clause 2.12.1 in MC 87 and MC 98, clause 43.3 of the New South Wales Government Form C21 and clause 9.3 of MPF that require the contractor to reduce the delay and not merely avoid the delay.

208. Some standard forms merely require the best endeavours of the contractor. It is to be realised that the word best endeavours has been defined as steps which are within the power and ability of the party but limited to such steps that are in its own interest and desire in order to achieve the endeavours[82]. As such the use of such language may be read as limitative to the contractors financial

[78] Dankirk Colliery v Lever [1878] 9 ChD 20
[79] Garmac Grain Company v Faure and Fairclough [1968] AC 1130
[80] Wilson v United Counties Bank [1920] AC 102
[81] R P Wallace Inc v The United States [2005] 21 Const LJ 378
[82] IBM v Rockware Glass Ltd [1980] FSR 335

ability and perception of likely effects all of which will be tested on a subjective standard. Therefore, such a clause may not be sufficient protection for an owner.

209. In order to ensure that appropriate mitigation steps are being taken and being enforced against the contractor, the owner may wish to have a clause that requires:-

- The notification of the delay event to enclose a statement of all practical steps being taken or intended to be taken to avoid or reduce a delay with the evidence supporting the stated practical steps[83];
- Therefore the onus of satisfying the owner that mitigation steps have been taken or intended to be taken is with the contractor;
- To require such steps as a condition to an extension of time and a claim for loss and expense;
- It can make specific reference to steps that ought to be taken in mitigating such a delay including rescheduling of activities, rescheduling of resources and even possibly accelerating the progress of works (with possible cost recovery).

210. However, in order for an owner/consultant to truly gauge whether the appropriate mitigation steps are being taken by the contractor, the owner/consultant must have a workable and contemporaneous as planned and updated work programme with details of various work activities and resources applied.

211. This workable and contemporaneous as planned and updated work programme with details of various work activities and resources applied is likewise required for the purposes of determining an extension of time and/or claims for loss of productivity and efficiency.

[83] Walker-Smith on the Standard Forms of Building Contract

212. Furthermore, if the notice requirement provisions and mitigation requirements are to be effectively managed, there needs to be a level of co-operation between contractor and the owner/consultant so that the effects of the delay event notified can be avoided, mitigated and the contractor can be compensated fairly for any effects thereafter.

213. This co-operation should be by way of an early warning meeting where:-

- The parties can make and consider proposal for how the effect of each delay event can be avoided or reduced;
- The parties can brain storm on solutions that could bring advantage to all those to be affected by recognizing that even the contractor will have to initially suffer a cash flow impact due to such events;
- The parties can then decide upon the action which will be taken and who is more capable and able to take such actions regardless of whether there is uncertainty as to who will be liable for the delay event.

214. This above suggestion is in fact drafted into clause 16 of the standard form ECC 2 contract. EEC 3 standard form contract has now included in clause 16.1 recommendations from the Change Management Supplements (a document prepared with suggested provisions in line with the SCL Protocol) which requires the contractor to not only identify the dates and activities which will be affected that have a co-relation to the completion of the project (i.e the critical path activities) but also all other activities where disruption and loss of productivity and efficiency will arise.

215. There has however being some debate as to the impact of condition precedent notice requirements in order for an owner to avoid liability for extensions of

time and loss and expense arising from delay events that were not notified in accordance to the notice requirements.

216. That debate took issue with delay events that were essentially owner controlled delay events. The principle of acts of prevention and benefiting from such prevention will raise as a basis to avoid condition precedent notice requirements and reliance thereupon by owners to avoid liability.

217. There have also been some serious consideration as to the fairness and wordings used in condition precedent notice requirement clauses.

218. The courts have eventually come to the following conclusions in relation to condition precedent notice requirement clauses:-

- If there are any ambiguities or inconsistencies within the clause, it will be construed contra proferentum against the requirement of a notice as a condition precedent to a claim[84];
- If the timeframe for notice is unreasonable in that, there is no possibility of the delay being apparent to the contractor within the timeframes suggested, then the condition precedent requirement will fail[85];
- If the delay events that ought to be notified are actually matters within the knowledge of the owner/SO, then regardless of the failure to notify, the SO is required to grant reasonable EOT[86];
- In Australia, the decision of **Gaymark Investments Pty Ltd v Walter Construction Group [1999] 16 BCL 449** suggest that the prevention principle overrides the condition precedent notice requirement. However Australian cases have since tended to avoid the severe results of the Gaymark

[84] Bremer Handelsgesellschaft mbH v Vanden Avenne-Izegem PVBA [1978] 2 Lloyd's Report 109
[85] London Borough of Merton v Stanley Hugh Leach Ltd [1985] 32 BLR 51
[86] London Borough of Merton v Stanley Hugh Leach Ltd [1985] 32 BLR 51

case by inferring a wide discretion to the SO to override time-barred EOT claims as an alternative to merely preferring the prevention principle;

- Presently there seems to be a consideration of whether the notification could have resulted in a mitigation process and therefore conversely the contractor should not be allowed to benefit from its own breach of failing to fulfill the condition precedent notice requirement. In situations where the early notice could have resulted in a mitigation of the delay by avoidance or reduction of its effects, then the strict requirement of the condition precedent notice will be upheld as depriving the contractor of any entitlement. There is also a further view propounded by the courts that a contractor cannot rely on the acts of prevention of the owner relating to the delay event, to avoid its obligations to give early notice which was in no way prevented by the claimed acts of prevention, and this is seen as unimpeachable logic[87].

CPM Network and Programmes

219. From time immemorial, human beings have been having disputes amongst each other whether it is personal, geographical or commercial. The difference throughout the ages has not merely been the method and forum of resolving such disputes but also the techniques in determining these disputes as far as possible so that justice may be seen to be done. After all the essence of placing blame and resolving a dispute is in determining who has caused the harm, the true extent of the harm and how is the harm to be compensated.

220. Even since the time of Aristotle, the doctrine of cause was in existence. The link between cause and harm has however had to develop in an evolutionary sense simply because human relationships and dealings have themselves developed from the singular and simple one to a myriad or web of

[87] Abigroup Contractors Pty Ltd v Peninsula Balmain Pty Ltd [2002] NSWCA 211, Turner Corporation Ltd v Austotel Pty Ltd [1997] 13 BCL 378

relationships passing through one dealing or transaction in which a dispute may arise. The complexity of the human relationships especially in commerce has resulted in the development of the principle of "**proxima causa**" with its subtlest of distinctive techniques using test such as "material", "formal", "efficient", "real" and "final" in determining the existence of the cause and its effect. This exact feature of the present day causation requirement is reflected by Lord Shaw of Dunfermline:-

"*Causes are spoken of as if they were as distinct from one another as beads in a row or links in a chain, but – if this metaphysical topic has to be referred to - it is not wholly so. The chain of causation is a handy expression, but the figure is inadequate. Causation is not a chain but a net. At each point influence, force, events precedent and simultaneous, meet, and the radiation from each point extends infinitely."*[88]

221. Most authoritative views have always proposed the use of common sense principles in determining the causation as it is seen as a question of fact, and some have propounded that these common sense principles ought to be the common sense of the ordinary man and not the logic of philosophers[89]. This similarly is the suggestion in a construction dispute situation albeit based on the sense of an ordinary construction man[90].

222. The danger with retaining this base principal is the subjectivity that inevitably encroaches into the determining process albeit with an attempt to apply an objective test. What is one judge's or arbitrator's ordinary man may not be the next. This uncertainty is exacerbated in situations where there are

[88] Leyland Shipping v Norwich Union Fire Insurance Society [1918] AC 350 at p.368-369
[89] Leyland Shipping case (supra), Yorkshire Dale Steamship Co Ltd v The Minister of War Transport [1942] AC 691 at p. 698, Knightley v Johns [1982] 1 WLR 349 at p. 367
[90] *"The test is what an informed person in the building industry (not the man in the street) would take to be the cause without too much microscopic analysis but on a broad view" per* His Honour Judge Bowsher QC, P&O Developments Ltd v The Guy's and Saint Thomas's NHS Trust [1999] BLR 3 at p. 10

multinational parties involved in a dispute and the arbitrator's themselves are multi-national.

223. It is also doubtful whether this simplistic ordinary man's test can and ought to be applicable in the present day and age when society has come to accept and rely on scientific and logical proof using the modern day tools which have been developed to allow as close a determination to the truth as one could get.

224. Whilst deducing causation by using common sense may seem attractive to the un-initiated, but to many who practice in the global and developing industries that apply modern technology to their fields including the construction industry, the separation of or link of cause and effect is a product of intellect and logical reasoning using tools developed for those very purposes.

225. Surely the guardians of justice (ie. the determiners of dispute) in professing the principle "*that justice must not only be done but also seen to be done*" cannot continue to defy the use of modern scientific or technological tools in determining any outcome of a construction dispute. After all, in the legal areas of crime and cases involving fraud, given that the burden of proof is exceptionally high, science and forensic analysis has been utilized and is the accepted practice.

226. Essentially the question of delay an EOT at all times relate to the completion date of the project. It is seldom seen in standard form conditions of contract where a contractor is entitled EOT merely for delays to the progress of works.

227. Therefore to assess whether a delay event affects the completion date of the project, there must be a comprehension of the activities that fall within the CPM Network and a verification that the delay event affects and delays the planned progress of a critical path activity.

228. All other non-critical planned activities will have floats thereby proving that they are non-critical. However, it must be comprehended that non-critical activities can become critical when these floats have been consumed by the delay event.

229. It must also be comprehended that whilst a planned work programme ought to have a fixed critical path, this critical path can shift over the period of the progress of works. Further it must be comprehended that critical paths are not matters written in stone because they merely reflect a logic of the sequence of works intended by the contractor which may be the most logical and also the most economical manner of progressing the works but at the same achieving the project period fixed under the contract. Logic can be changed depending on the willingness to spend money and incur more cost and therefore it must be understood that re-sequencing of activities can take place but obviously with a price.

230. Most importantly, the courts have woken up to the logical and scientific understanding that all delays to a project will not necessarily delay the completion of the project[91]. There have however been certain comments made by judges who are of course not technically trained and do not have full understanding of the on-goings within a construction project, that a delay to progress is co-extensive to a delay to completion[92].

231. The courts have also woken up to the fact that in construction projects there can be a multiplicity of delay events and disruption events existing at any point of time and they all have to be considered together with their co-relation to the critical path activities and the productivity intended by the contractor in order to assess the "cause to effect" (causation) of any particular event of

[91] Ascon Contracting Limited v Alfred McAlpine Construction Isle of Man Limited [1999] 66 Con LR 119
[92] Colman J, Balfour Beatty Buildings Ltd v Chestermount Properties Ltd, [1993] 62 BLR 1

delay raised by the contractor as a basis for a claim. Therefore the courts have agreed that the SO must consider the impact on progress and complication caused by other events in determining whether a claimed delay event has been the cause to the effect claimed by the contractor[93].

232. As such, it is todate recognize that CPM analysis on CPM Work Programmes are the best evidence of cause to effect.

233. It has now become common place in USA that the consultants have the ability to read, review and analyse CPM programmes and carry out retrospective analysis of critical path programmes and multiple causes in order to assess the proof of causation.

234. In Malaysia, there seems to be a reluctance to expend monies on consultants with such ability and experience. This is viewed as extremely small mindedness simply because it is without doubt that delays and claims on delays have crippled the Malaysian construction industry. The expenditure on such ability would be insignificant in comparison to the expenditure on experts, lawyers and eventually payment on claims that may not be conclusively proven, all of which could have been avoided if proper systems and personnel with ability were introduced to manage and monitor the contractor and delay events during the progress of the works.

235. To quote Mr. Recorder Toulson QC (as he then was) in **John Barker Construction Ltd v London Portman Hotel Ltd [1996] 83 BLR 31** on what constitutes the basis of a fair and reasonable EOT:-

"the SO must:-

[93] Henry Boot Construction UK Ltd v Malmaison Hotel (Manchester) Ltd [1999] 70 Con LR 32

1. *apply the rules of the contract;*
2. *recognise the effects of constructive change;*
3. *make a logical analysis, in a methodical way, of the effect of developer's time risk events on C's programme; and*
4. *calculate, rather than make an impressionistic assessment of, the time taken up by events"*

236. Further to quote Fenwick Elliot, Robert, Building Contract Litigation (4th edn, 1993), at p. 204, the author says that to deliver cogent evidence in retrospective delay analysis, the expert should have satisfactory "…. *Planning expertise to operate the time analysis…. Expertise in the task of retrospective delay analysis…. And legal expertise to ensure that the time analysis is carried out in a way that is acceptable to the courts or arbitrator …..".*

237. It also goes without saying that the expert consultant should also understand the contract and the risk allocation process and considerations in addition to the techniques of specification writing.

238. In a delay analysis, a logical method would be dependent on the contract form, the nature of the work to be analysed, the nature of the evidence available and the nature of the delaying events that have occurred before, in addition to the delay event claimed and their respective effects.

239. Obviously the extent of the analysis will depend upon whether the delay event was of such a nature to cause the entire works to be suspended. Where the effect is suspension of the entire works, there is no need to carry out any extensive logical analysis.

240. The logical analysis where delaying events are claimed to have affected the progress of critical path activities is firstly a determination of whether the

activity affected is truly a planned critical path activity and secondly a detailed consideration of whether the critical path still remained with the affected activity if there were previous delaying events and impacts on the works.

241. In a delay analysis within the construction industry the problem of causation is related to identifying the chain of causation from a cause to the delay in "completion" of the project. This is effectively an anticipatory analysis.

242. The multiplicity of causes to the multiplicity of effects is the basis for realising that there is no room in the construction industry for a cause to effect analysis using common sense without some form of analytical process.

243. Not everyone including judges are able to think in terms of primary cause, intermediate cause and the ultimate effect with absolute objectivity. It is for this reason that it is long been recognise in the US courts and now the UK courts and clearly in arbitration that anecdotal opinion testimony of witnesses of fact unsupported by programme based proof does not reach and should not reach the necessary level of credible proof of cause to effect.

244. The most effective analysis is commonly referred to as time impact analysis which involves selecting a baseline which is and should be the planned programme of works, correcting this planned programme of work for errors, updating the effect of progress upon the planned programme of works and only thereupon calculating the potential effect of the delay event upon the updated and reviewed planned programme.

245. Unfortunately very often the planned programme is not updated by the contractor except when he is intending to make a claim for EOT and submit the same to the SO. Therefore when delay claims are tested for the cause to effect proof, the expert will have no choice but to carry out a retrospective

analysis. A retrospective analysis is a process of reconstructing the planned programme from the contemporaneous project records and recollection of the project staff.

246. It is imperative that the analysis must begin with the true and proper planned programme and not some other hypothetical programme or claimed programme produced by the contractor[94].

247. The calculation of causal effect by programme analysis is generally carried out by:-

- Selecting a baseline;
- Identifying the cause of any delay;
- Revising the duration of any affected activities on the baseline;
- Adding the duration and local connections of any new activities;
- Recalculating the overall duration; and
- Comparing the completion date of the recalculated programme with that of the baseline programme.

248. There however has to be a realisation that the proper updating of the planned programme until the delay event is said to occur will be the baseline planned programme that has to be used. Therefore if the analysis does not take into account the actual progress of works by the contractor until the delay event date, the baseline would be considered as ineffective[95].

249. In the USA there has been an outright rejection of any method that doesn't involve a proper and strict proof of causation. The courts in the US have rejected any attempt to rely on a principle of "proper inference" that cause of

[94] Donohoe Construction Company, ASBCA No 47310 et al (1998) at p. 5
[95] Ascon Contracting Ltd v Alfred McAlpine Construction Isle of Man Ltd (1999) 66 Con LR 119 at p. 146

delay at one stage would have a continuing effect so as to produce a same delay at a later stage[96]. The use of the proper inference principle is to suggest a switch of the evidential burden of proof onto the opposing party to raise evidence countering the inference. However if it is recognise from the start that any effects of a delay event at one stage can diminish over a passage of time and can change because of the complexity of intervening events, then the courts will understand that it ought to be the evidence of burden of the party claiming the delay to proof that the effect continued to be critical to the completion of the project.

250. A time impact CPM analytical technique allows the event tracing during the course of the project to its putative effect and thus its consequent effect on the key dates and the completion dates. Such an contemporaneous analysis will have to take into account whether or the delays to the progress of an activity is concurrently delay to the completion, whether or not they continued to affect critical activities where there possibly were changes in sequence, logic and float.

251. Therefore, a retrospective analysis will depend on:-

- The quality of the programme used for analysis;
- The extent to which individual events can be established by substantive evidence;
- The nature of the changes made to update the master programme to an as-planned programme during the construction process; and
- The proof that the work sequence illustrated in the updated as-planned programme represents what was expressly or impliedly accepted to be C's intentions at the time.

[96] Kinetic Builders Inc, ASBCA Nos 51012 and 51611 (1999)

252. It should be understood any reliance on the master programme or the 1st planned programme has to overcome the difficulties of events that have occurred in the past which may have caused a shift in the critical path, concurrency on delays, the effects of any intended early completion, the consumption of floats, any constructive or instructed accelerations and any re-sequencing or increase resources or switch of resources during the progress of the works whether for the contractors own commercial purposes or for previous mitigations.

253. The consumption of float changing a float activity into a critical activity was recognise in the Barker case.

254. It is now without doubt that the courts in the UK and the US have adopted the following view as the desired method of approach in determining and therefore proving cause to effect:-

"the foundation must be the original programme (if capable of justification and substantiation to show its validity and reliability as a contractual starting point) and its success will similarly depend on the soundness of its revisions on the occurrence of every event, so as to be able to provide a satisfactory and convincing demonstration of cause and effect. A valid critical path (or paths) has to be established both initially and at every later material point since it (or they) will almost certainly change."[97]

255. In principle, whether the proof is offered contemporaneously or retrospectively, in order to demonstrate a causal relationship between a developer's time or cost risk event and its effect, the following process should be followed:-

[97] Balfour Beatty Construction Ltd v The Mayor And Burgesses of the London Borough of Lambeth [2002] 1 BLR 288

- If based on the as-planned programme, check and verify the baseline programme as a feasible method of construction, and that it was updated from time to time to conform to the progress actually achieved;
- Identify whether at any time the programme has been amended or revised to accommodate changed methods of working, changed resources or to achieve accelerated progress;
- If based on the as-built programme, check and verify the as-built programme;
- Develop a comprehensive listing of all changes or unanticipated events that occurred during the project and relate those impacts to specific points in time;
- Review the contract documents to confirm that the change or unanticipated event is a developer's time or cost risk event;
- Identify the date of initiation of the causal event;
- Calculate the effects on progress of the variances in work sequences, activities and durations, manpower and resources;
- Calculate the effects of identified delays to progress on key dates;
- Prepare a complete written description of each major change or event; and
- Write up a narrative explaining the process and results.

256. There has also been an appreciation by the courts that work programmes can be reflective of simple entire items of work or as detailed as zone programmes activity within items of work programmes and as detail as each point of activity within an activity programme. Therefore the baseline programme rely on should include any detailed work programme in existence as the best proof of the critical path.

257. There are various critical path analysis techniques some of which use the static method namely as-planned vs as-built, as-planned impacted and as-built but-for, and some which use the dynamic method namely time impact analysis.

258. The various analysis techniques can either be based upon and entire consideration of the start to finish of the project, or in very complex project, the analysis considers discrete and different periods guided by major impact events thereby creating a set of periods which are analysed in succession culminating in the impact on the completion date. This is referred to as the "windows method" or variances to it labelled as "snap shot method" and "time slice method".

259. In June 2000, at a presentation to the Society of Construction Law in London, England, there were discussions on a particular arbitration where the speakers had expressed their views that the parties did not know or understand how the delays had occurred, how they could have been avoided or mitigated and eventually how they could be proved to be caused by particular events. The majority of the audience expressed their interest to do something about it and eventually on or around October 2002, a document termed as "**Delay and Disruption Protocol**" was published[98].

260. This document more aptly known as the SCL Protocol, sets out a framework for managing and eventually proving entitlements relating to delays and disruptions. It is not to be construed as an exhaustive document solving all problems in the covered area but it is the first clear attempt at providing clear and precise guidelines and recommendations for the standards in order to manage, control and resolve some of the construction industry's traditional and most serious of problems namely, delays and disruption[99].

[98] The Protocol document is annexed to this paper in Attachment 1 and is referred to in detail in later parts of this paper.

[99] In the UK, it was reported that during 1999 to 2002, there were approximately 58% of the private construction projects and 63% of the government projects that experienced delays. (sources from Construction News, 18.4.1999 and Department of Trade and Industry KPI Report 2002)

261. There have also been significant developments towards a precise and unified approach in America and they have referred to the SCL Protocol[100].

262. If the SCL Protocol recommendations and other standards are to be an evolution in construction disputes and resolution practice, the standard forms and conditions of contract employed have to provide the standards applicable between the parties and the courts would have to establish reliable case precedents. Only with these overall unified steps forward, can the construction industry see an improvement in the resolution of a number of disputes emanating from these standard problems simply because these problems would have been better managed, mitigated and eventually settled on the basis that the standard of proof can be easily ascertained.

263. The Malaysian standard forms and conditions of contract are sadly lagging behind and with the drafting inertia that seems to exist with the professional bodies related to the various professional bodies in the industry, there is no light at the end of the local tunnel. However, the use of foreign standard forms and conditions that are constantly developing and improving would be currently the only solution.

264. In terms of the judicial input, currently there only seems to be a forward step taken in the US where there is a dearth of reliable authorities applying these modern standards. In setting up the Technology and Construction Courts, the UK has also strived to introduce a more knowledgeable and willing set of judges from the construction dispute resolution practices. There are now some signs that the UK judiciary is also moving towards that direction.

[100] College of Scheduling by the Project Management Institute, the accredited standards by the Association for the Advancement of Cost Engineering International

265. Whilst the particular type of step forward as taken in the UK is unlikely to happen in Malaysia in the near future, but if the UK and other commonwealth nations produce reliable authorities which encapsulate the logic of the use of these modern methods in proving cause and effect, there is no reason why the Malaysian courts would not or should not strive to apply the same standards.

266. It would however defeat the entire purpose if the standards are applied but the evidence using the standards are not understood. This would inevitably again turn construction dispute litigation into a lottery. So inevitably, the quality of the determiners will be a dictating factor.

267. The lack of use of these modern standards in many type of projects in Malaysia has also led to a lack of experience within the dispute resolution practices and therefore, the Malaysian local domestic arbitrators also suffer the same faith and predicament albeit with more enthusiasm and willingness to understand the evidence and apply the standards through expert evidential assistance.

268. Even the Malaysian judiciary has the opportunity to ensure that these modern standards are applied and appreciated even though the judges may be un-initiated. There are provisions in the court procedure for the appointment of a court expert adviser[101], an assessor assisting a judge[102], a reference of a question arising in a dispute to a special referee[103] or even a reference of a whole dispute to a special referee, arbitrator or an officer of the Court (a senior independent lawyer / recorder etc)[104]. The provisions under Section 24A of the Courts of Judicature Act 1964 are especially interesting and it is annexed in Attachment …...

[101] Order 40 of the Rules of the High Court 1980
[102] Order 33 Rule 1(b) of the Rules of the High Court 1980
[103] Section 24A(1) Courts of Judicature Act 1964
[104] Section 24(2) Courts of Judicature Act 1964

269. Whether this will be the steps taken in the Malaysian Courts is yet to be seen as currently there may be a lack of encouragement from the powers within the judiciary on the use of these assisting provisions and there is an ethos that any public action of allowing lay determiners into the system may highlight a weakness on the part of any particular judge.

270. It is however felt that the Malaysian legal and judicial fraternity along with the local construction industry can no longer resist the common and legal sense in applying these modern, logical and scientific standards of proof of cause and effect using technology that is available, in managing expected problems, resolving claims, and determining the outcome of certain disputes.

271. In order to understand the need for further development in the area of proving cause and effect, the best method is to study the standard problems faced in the industry (ie. the risks) and the legal developments and repercussions arising therefrom.

GLOBAL CLAIMS – TO WHAT EXTENT OUGHT IT REMAIN

Global claims

Global claim have been defined, as the name suggested, as a global or composite sum put forward or claimed as damages due to 2 or more separate heads of claim or events, where it is alleged that it is impracticable or impossible to provide a distinct sum claimed for each of the cause and effect. In the United States it is better known as the total costs claim.

In such claims, the claimant simply takes the difference between the total actual costs and the total estimated costs of carrying out the works as being the increase in costs representing the damage suffered due to the delaying or disruptive events. There is no nexus or connection shown between the individual events to their consequences whether in terms of time or money claimed.

There are further hybrids of the global claim where a number of causes are rolled up to assert a particular effect or a number of causes are rolled up with a number of effect, all amounting to a global sum. This type of claim is true to its better known name, the rolled up claims.

Basis of global claims

The reason for making a global claim is that due to the complex interaction between 2 or more delaying or disruptive causes or events, it is impracticable or even impossible to accurately apportion a particular sum to a particular effect to a particular cause.

The reasoning received judicial approval albeit with certain qualifications or limitations in ***Crosby v Portland UDC (1967) 5 BLR 121*** and ***London Borough of***

Merton v Leach (1985) 32 BLR 68. In ***Crosby*** Donaldson J. allowed the lump sum award on the basis of the arbitrator's findings that it was impossible to assess the periods of delay and costs to each of the delaying events and loss of productivity claimed. This was accepted by Vinelott J. in ***Leach***. As discussed later, the reasoning seems to have been widely accepted by subsequent decisions.

Objections

It has been argued that the reason for making global claims cannot be justified at present times given the requirement to keep site records, site diaries and regular updating of the progress of works with the relevant computer aided work programmes and manpower with productivity controls. In the United States there are now a string of authorities which propose that at present times the justification for global claims can no longer be sustained see : United States Court of Claims of 7 judges in ***Boyajian v US 423 F. (2d) 1231 (1970)*** and by the United States Federal Circuit Court of Appeals recently in ***Cervidone Construction Corp. v US 931 F 2d 860 (Fed. Cir. 1991)***.

If the global claims were to continue to receive acceptance, it would unjustifiably place a lax contractor who does not keep proper record in a better position of being allowed to make a global claim as opposed to those complying with the contractual requirements who will not be allowed to make a global claim once shown to have some degree of proper record keeping.

Pleadings – the camouflage of possible weakness

One of the major objections to global claims is that as pleaded, it contradicts the fundamental principles of pleadings, be it in Court or Arbitration, that the other party

must know the case it faces in full particulars so that it is not prevented from raising differing alternatives or particular defences rather than a mere global defence.

A global claim, in effect will merely state the list of delaying and disruptive events, for which the Respondent is said to be responsible, the global effect of the list of events which may be represented by a global period with the ensuing increased costs as represented by the global sum claimed. Not unsually, even the nexus between the events claimed and the periods of delay caused by the events are not pleaded but instead a rolled up period of delay is pleaded.

Such technique of pleading is aptly called the ‘forest technique’. The technique raises wide and general terms encompassing all possible eventualities that could arise under the contract without exceptions. Such a pleading does not inform the other party of the exact nature of the claim made against them and the material facts or particulars relied on for such a claim, which the other party is entitled to know. The other party or indeed the Court/Arbitrator is left guessing as to the details of the claim and may be caught by surprise later. This global pleading also unfairly allows the party to ‘change its course’ during hearing.

Such a form of pleading at face value seems to unreasonably and unfairly switch the burden on to the other party to displace each and every cause and effect without truly being able to judge the entitlement on a cause to effect basis. For instance, allegations of a late issuance of a particular construction drawing may prima facie be shown to be late by 2 weeks after its due date based on the work programme. However, this delay may or may not have affected the progress of the works to be carried which is said to have been delayed by 2 weeks. Now, if during this period there was another cause of delay raised by the claimant which may not be truly the respondent’s risk and again the effect of this delay is not globalised to the 2 weeks, how can the respondent analyse the cause to effects occurring to the claimant and raise this delay event as a defence.

The effect of such a global plea and attempt at globally proving causes, effects and causes to effects (note not cause to effect in the singular) places the respondent in an unenviable position that it would have to carry out the task of a critical analysis of the claimant's work programme showing that there was in fact no delay caused. An example is seen in the case ***McAlpine Humberoak Ltd. v McDermott International Inc (1992) 58 BLR 1*** where the defendant went through the unenviable task, required in such a case according to Lloyd's L.J., of *'a retrospective and dissectional reconstruction by the expert evidence of events almost day by day, drawing by drawing, TQ by TQ and weld procedure by weld procedure, designed to show that the state of additional drawings which descended on McAlpine virtually from the start of work really had little retarding or disruptive effect on its progress'*.

The respondent will effectively have to reconstruct the progress of works and job and analyse every step so as to establish possible defence without being able to focus on particular events occurring at particular times.

Such a process required of the respondent would inevitable result in a longer arbitration period and higher costs of the arbitration. It entails studying voluminous documents discovered and obtaining extensive expert analysis on all possible cause and effects that did arise. Such need for voluminous discovery of documents and the proliferation of expert evidence has been identified as the 2 main causes for the increase in litigation costs. Lord Woolf's *Access to Justice* which resulted in the revamp of the civil procedure in England, pointed out these two factors as the culprit. In fact, without the identification of the sums claimed for any particular effects, the respondent may not able to concede (even if he is disposed to do so) to any sum claimed for any particular event and to resist the rest. This also hampers any form of culling down of the issues at the hearing and truly hampers early settlement of disputes.

Limitation

In ***Crosby*** Donaldson J. made it clear that global claims were limited to only instances where (i) it is justified because it is impracticable or impossible to make an accurate apportionment of the claim to a particular event but (ii) where the individual items of the claim can be dealt with in isolation, the arbitrator must make an individual award and (iii) the global claims approach should be used as a last resort method only.

Vinelott J. in ***Leach*** went on to suggest further limitations to globally pleaded claim by requiring that the difficulty in apportioning the claim to particular events must not have been created by the claimant's unreasonable delay in making the claim; and that each event claimed must be identified separately and each of the events claimed qualifies the claimant to the benefit sought i.e. the composite sum claimed. This meant that each cause had resulted in the equivalent effect and these equivalent effect amounts to the entire global sum claimed. Therefore, if any one cause were to succeed, there would be no need for apportionments of effects and the sums claimed. This suggestion of course made no reference to concurrent causes and its outcome.

Mr. Recorder Tackaberry QC, sitting as a deputy Official Referee in ***Mid Glamorgan County Council v J Devonald Williams and Partner (1992) 8 Const. L.J. 61***. analysed the development in the areas of global claims and found that global claims in general could not be maintained. He stated that (i) a proper cause of action must be pleaded; (ii) that the specific events are relied upon, must not only be shown to satisfy the contractual requirement but also its causal effect; and (iii) that there must also be nexus between the event relied upon to the money claimed. However, he did agree that global claims were allowed where the extra costs claimed involved a complex interaction between various delaying events that it was impossible or impractical to plead specific causes to specific effects or specific money claims.

Whilst there have been some liberal views on global sums claimed, there has been less acceptance of rolled up causes to rolled up effects.

An attempt to extend such global claims to the 'proof of the claims', i.e. effects occasioned by the multiple causes, was rejected by the Privy Council in ***Wharf Properties Limited v Eric Cumine Associates (No. 2) (1991) 52 BLR 1***. In that case, the failure of the pleading to provide the nexus between the periods of delays claimed as a consequence of the delaying events was held to be embarrassing and providing 'no agenda' for the trial. The Privy Council therefore struck out the statement of claim.

In ***McAlpine Humberoak Ltd. v McDermott International Inc (1992) 58 BLR 1*** the Court of Appeal not only held that the claimant failed to prove the delay in the works were due to revised drawings, variation orders and late response to technical questions as alleged, but also failed to prove the indirect costs claimed as a result of the allegations made because the evidence of quantum differed substantially from the global cost claimed.

Likewise the USA courts have rejected global claims for proof of cause to effect but have on occasions allowed global quantum claims.

These decisions are in line with the notion that proof of liability and proof of quantum are 2 separate issues. If global claims are to be tolerated, it should be limited to quantum claims only but with a basis to calculate or extrapolate a daily cost to delays. It should not be taken as a dispensation of the standard of proof of cause to effect which is effectively the delay event and the period of delay caused thereby.

Dangers of global claims – A warning

A global claim suffers from a fundamental flaw in that it assumes the claimant as having been perfect and not culpable any way whatsoever or howsoever for the rolled up causes to the rolled up effects and/or for the increased total cost global claim. In the event there is any evidence of the probability that actual cost overrun had happened due to the claimant's own risk such as under-pricing, poor site organization, poor costs controls, inexperience or even external factors such as labour strike, labour shortages, inclement weather etc, then the Court/Tribunal is left without any method of gauging the true liability and quantum for the purpose of assessing the true entitlement of the claimant. In fact, it is this fundamental flaw that respondents will be looking to exploit to undermine or even fatally destroy such a global claim.

This simple danger of relying on global claims is that a claimant proceeding on a global claim basis runs an enormous risk of the entire claim being dismissed in the event that liability for any of the causes said to be materially contributing to the global claim is decided against the claimant. This is on the basis that there is no evidence of the make up of the damages for the other events of claim that may be allowed and as such may entitle the claimant to RM1.00 nominal damages. Alternatively, as seen in ***Leach***, the other danger that arises is in the event that the composite quantum claimed can be shown to have also been contributed to by the claimant's own delays and faults.

Mr. Recorder Tackaberry QC in ***Mid Glamorgan*** did however warn that there was a danger at the hearing stage where if one of the causations to the damage was weakened, it is unlikely that the balance would stand.

The warnings and dangers have been widely received by most, if not all, authoritative texts on this subject matter and it was also adopted and approved by the Lord MacFadyen in ***John Doyle Construction Ltd. Laing Management (2002) BLR 393***.

In ***John Doyle***'s case, whilst recognizing that global claims could in principle be advanced, the Judge also recognized the fallibility of the reasoning or logic behind such global claims. In the event it is shown that a material part of the global claim is due to an event which the claimant itself is responsible, the whole claim may fail as it stands to reason that this sum could not be isolated from the rest of the composite claim. This is irrespective of whether the culpable event was one of the events claimed by the claimant in the action. Against this rigorous approach, Lord MacFadyen did proceed to provide 'rescue options' available to claimants in circumstances when the global claims fails on such a basis.

The first is that where it is possible to attribute any of the sums claimed to individual causative events, then the claimant may still likely recover those so proven. Secondly, causation must be treated with common sense, in particular where the same period of delay is due to more than one event of delay. For instance, the global claim is not defeated even if some delaying events for a particular period of delay claimed is the claimant's responsibility as long as the dominant delaying event for the same period of delay is the respondent's responsibility. Thirdly, where even if the event of delay cannot be said to be dominant, the loss may still be apportioned between the claimant and the respondent, provided the events for which the respondent is liable for remains the material cause of the loss.

Criticism of the rescue options

The 1st rescue option is to a large extent acceptable only in that the evidence of particular cause to effect to damage had been established without a doubt. However, to this acceptance a proviso must be added, in that if the plea was global but the evidence led gave rise to distinctions, the respondent must be entitled to time to consider the development of the evidence for which he may not have previously been aware or given fair warning through pleadings.

On the 2nd and 3rd rescue options, with all due respect, the Courts/Tribunals cannot consider themselves obliged to go through volumes of evidence produced by the claimant so as to assess the dominance of events and the effects thereto. In an adversarial system, the onus of proving the case must remain with the claimant. The evidential burden of proof should not be simply passed onto the respondent by the mere cry of difficulty on the part of the claimant.

The possibility of such court/tribunal assisted claim, arguably based on a sense of perceived 'justice', may open the floodgates and encourage more unsubstantiated global claims with claimants merely regurgitating all its available evidence requiring the respondent to siff through the evidence to decipher the likely damages to various distinct causes and effects.

The eventual ability of the court/tribunal to apportion damages to particular causes at the hearing would effectively mean that the claimant itself could have done so, and as such, shows that the global claim basis is unjustified. Alternatively, such an apportionment without evidence from the claimant would be akin to a guessing game or lottery. Further, the courts determination of the apportionment may never have been an issue ventilated and thus considered by the respondent who is caught off guard and thus deprived of natural justice. Flexibility to the strict requirements of pleadings does not justify the proliferation of evidence in such a broadly pleaded claim. In fact, the arguments against global claims have been centered on whether globally pleaded claims ought to be struck off even before the hearing stage.

There is also reference to the words 'material' for the purposes of apportionment of damages as if to suggest that there is a clear and distinct difference between 'dominant' and 'material'. It is the use of such indistinguishable language and concept that lead to uncertainty and more disputes.

The ***John Doyle***'s case raises more questions than answers and does not provide any conclusive approach.

Conclusion

Global claims at present times ought to be rejected. Whilst at pleading stage some amount of flexibility can be allowed, it surely cannot be the same for standard of proof. Why ? Because :-

- presently there are technological developments that if utilized will allow a fair and proper assessment of the dominant cause to the effect;
- a party cannot be allowed to refuse to analyse and provide evidence of a cause being a dominant cause and at the same time suggesting that all other causes are equally dominant;
- with CPM techniques there can only be one dominant cause for any particular effect;
- the courts of the arbitrators should not be encouraged to try their hands at guess work apportionments whilst under the guise of performing justice. Justice must also be seen to be done.

In the words of Byrne J in ***John Holland v Kvaerner (1996) 82 BLR 81***, global claims must be approached '*with a great deal of caution, even distrust*' as it may be driven by a '*desire to conceal its bogus nature by presenting it in a snowstorm of unrelated and insufficiently particularized allegations, or by a desire to disadvantage the defendant in some way*'.

We still await any pronouncements on the global claim issue by the Malaysian Courts.

- *Hudson's Building and Engineering Contracts (11th edition)* – I.N. Duncan Wallace, Q.C.
- *Keating on Building Contracts (7th Edition)* - Stephen Furst, Q.C., Vivian Ramsey, Q.C. (original author Donald Keating, Q.C.)
- *Delay and Disruption in Construction Contracts (2nd Edition)* – Keith Pickvance.
- *Global Claims* – Trett Digest Michael Black, Q.C.
- *Why there will always be globally pleaded claim* – (2004) 20 Construction Law Journal 435-443, Philip Mirabelli.
- *Disruption and Delay: Fair entitlement and the regulation of risk* – (2006) 22 Construction Law Journal 92-116, Patrick M.M. Lane, S.C.

EXPERTS AND THEIR ROLES – HOW THEY CAN BE MORE EFFECTIVE

Experts

272. Experts are persons having special skill or knowledge in his/her profession or calling, usually recognized by their peers. Professional qualifications or affiliation to a professional body is usually an indication of his special skill or knowledge. However, the expert need not be the leading or senior practitioner in the particular field, but need only be sufficiently skilled.

The importance of expert evidence

273. The importance of expert evidence is undeniable, more so in highly technical areas of dispute or litigation such as construction disputes, where lay persons are not knowledgeable or do not know the meaning and implications of the evidence tendered or the 'science' involved.

This is prevalent in court litigation as Judges, in their wisdom and knowledge of the law, may not fully grasp or understand the 'science' involved. This is true in arbitrations as well. Arbitrators, though in possession of the relevant and necessary qualifications of science, may lack the necessary practical state-of-the-art hands-on experience relevant to the dispute that may be required to fully grasp the technical matters raised as 'science' never stops evolving.

Role of the expert

The most fundamental role of an expert is to provide opinion on technical matters to *assist* the court or tribunal in determining issues of technical matters. It cannot be over-emphasized that it is these lay persons that ultimately decide on the issue factually, and on whether one expert is to be believed or relied on rather than the other.

However, a convincing and thorough expert opinion is a very persuasive tool to convince the fact finder of the case being made.

Who to appoint

Sound case strategy requires the selection of an appropriate expert who is recognized as such or even an authority in the areas that require his/her expertise. Ideally, the expert must:-

1) be reasonably objective with hands-on experience with the latest development in the area;
2) have ability in opinion writing and presentation as a witness in the witness box.

Previous experience as expert witness may be an added advantage in terms of the required composure in the witness box and to know what is needed to be said. However, care must be taken as the expert's reputation perceived by the practitioners, Courts or Tribunals may hurt the case. Some expert opinion may carry little weight as he/she is perceived (rightly or wrongly) as consistently biased, for example towards the Plaintiff or insurance companies.

The importance of the expert's reputation is highlighted in the case of ***Vakauta v Kelly (1989) 167 CLR 568*** where the High Court of Australia held that the Judge's negative perception of the experts general reputation would not necessarily amount to bias resulting in the Judge's order or judgment being set aside. Although the judgment

in that case was eventually set aside by the High Court of Australia, it was not on the ground of the Judge's perception but on the ground that the Judge's bias had affected the judgment pronounced.

The point to note is that the danger of bias in the trier's mind is often inevitable as humans are not infallible. Bias may not necessary translate into or be seen in the judgment/decision itself to allow the relief of setting aside. On the other hand, it is not realistic to say that such bias could not have affected the judgment as it may have been written in such a way as to avoid such pitfalls.

There are also various types of experts. There are experts with sufficient experience and authority that may do well under cross-examination, but may lack the necessary Court/Tribunal experience as their time is mostly spent applying their special skills and knowledge in the industry. There are those who are 'experts' in providing expert opinion in disputes and appear so often in Court/Tribunal rather than in the discipline in issue.

There are also the pure theorists or academics, whilst exceptionally learned, may not have the necessary hands-on experience. There are also the 'Mr./Mrs. Big' leading a team of expert who may fit the role of an expert with practical and Court experience, but will leave the opinion to his/her junior members of the team, and usually, end up with a multitude of amendments to the opinion at the 11th hour.

Ultimately, there must be a balance between experts with practical hands-on experience whilst at the same time, sufficiently tested in Court/Tribunal hearings. At the end of the day, it boils down to the technical issue in dispute as the guiding criteria for selection. Technical issues which are generally accepted and not in dispute or the subject of major criticism, may not perhaps require such an authoritative expert. In such event, expert with less authority but more Court/Tribunal exposure may be selected.

When to appoint

It was once said that consultants or experts are appointed once the ink in the contract is dry. Although it is not suggested that disputes/litigation are inevitable, it may not be an unwise decision to appoint the expert at that early stage after all.

Early indication of the case

A more practical and economical approach, would be to appoint the expert as soon as the dispute arises. Early appointment of experts will provide the parties with the crucial early indication of the areas or issues in dispute and the areas of strength and weaknesses of their case. This will assist the legal team involved. With the concise issues in dispute and all technicalities involved explained and understood by the legal team, their study of the legal implications (cause and effects) and the ability to draw out the evidence would be more focused. This will provide the client with a valuable objective view of the strength and weaknesses of the case at the outset, both from the technical and legal perspectives.

The client will also be advised on the cost implications of the legal team, the expert or the expert's team, as well as the costs of the litigation/arbitration.

The instructions to be given to the expert for his/her opinion in the event of the matter proceeding to trial can also be settled. This is important as incorrect instructions or instructions understood wrongly will have a substantially adverse effect on the expert's credibility and the weight or even the relevance of his/her opinion.

Informed decision

With the technical, legal issues and cost implications thrashed out at the outset, an informed and well advised decision can be made on whether to attempt settlement or to litigate the matter. To a certain extent, this will encourage settlement which is ultimately a commercial decision by the client. By far the majority of the disputes are settled 'out of court' without any hearing.

Evidence gathering

With the issues in dispute understood and fine-tuned, the gathering of relevant evidence and fact-finding mission can commence immediately with defined precision. This will ensure that the required proof or nexus between cause and effect are in hand. The expert, or at the very least the expert's team, will also be expected to take part in the discovery process. Once the issues are defined, relevant documents or evidence (useful or otherwise) are picked up and not over-looked during the discovery process.

Early indication of expert's view

Upon appointment, the expert will usually be required to provide his preliminary opinion. With that, the client will have of the expert's initial view on the subject matter and will obviate the need to change experts halfway during the proceedings which may entail serious repercussions. In ***Hajigeorgiou v Vasiliou*** (2005) the Court of Appeal allowed the Plaintiff to rely on another expert's evidence, not the expert named previously. Alternatively, the Court could also allow reliance on the other expert opinion on the condition that the opinion of the earlier named expert is disclosed. This is to prevent expert shopping.

Pleadings

More importantly, the pleadings can settled with a certain degree particularity as issues would have crystallized and been defined with the assistance and input from

the expert. Experts appointed after pleadings are settled and near hearing may be fatal to the case as the pleadings may not have been pleaded in conformity with the views of the expert.

Conclusion

The timeous appointment of experts will ensure that the necessary nexus between cause and effect (time and money) are identified and evidence gathered with precision. This will also ensure that the legal team is apprised of all the issues and the claims pleaded with sufficient materiality and particularity, avoiding potentially delaying applications for particulars. Such a claim would also be able to withstanding any application to strike out.

- *The Expert Witness in construction dispute* – Michael P. Reynold 2002.
- *Expert Evidence law, practice, procedure and advocacy* – Ian Freckelton & Hugh Selby 3rd edition 2005.
- *The right credentials* – Kit Jarvis, Legal Week, May 18, 2006.
- *The price of expertise* – Ruth Pratt, Legal Week, May 18, 2006.
- *Witnesses to change* – Dominic Carman, Legal Week, May 18, 2006.
- *A test of impartiality* – Nicholas Cage, Reed Business Information, March 11, 2006.
- *Open Forum* – Stephen Rowe, Reed Business Information, March 11, 2006.

Adjudication – the appreciation of cause to effect proof

Adjudication is the new buzzword to sweep the construction industry of this region.

In very brief terms, it is a form of interim dispute resolution on payment issues between contracting parties, targeted to get the cash flow pumping through the chain of contractors till the project is completed.

The key motivation behind the adjudication scheme was to improve the cash flow of contractors at the lower-end of the contractual chain who, all too often, were being financially squeezed by the conglomerate main contractors who refused or withheld progress payments in the knowledge that court/arbitration proceedings would offer too slow and too late a remedy for the contractor. As a result of these oppressive tactics, insolvency of these lower-chain players had become a disturbing upward trend.

Adjudication was therefore conceived to provide quick interim relief to these cash-starved contractors.

Legislative Background

The United Kingdom introduced compulsory adjudication for construction disputes in mid-1998 through section 108 of the Housing Grants, Construction and Regeneration Act 1996 and the Scheme for Construction Contracts (England and Wales) Regulations 1998.

Since the year 2000, Australia, New Zealand and Singapore have all jumped on the adjudication bandwagon by the following legislation:

- The Building and Construction Industry Security for Payment Act 1999 No. 46 in New South Wales, which came into force on 26.3.2000[105];

- The Building and Construction Industry Payments Act (BCIPA) in Queensland which came into force on 1.10.2004[106];

- The Construction Contracts Act 2004 (No. 16 of 2004) in Western Australia, which came into force on 1.1.2005[107];

- The Construction Contracts Act 2002 (No 46 of 2002) of New Zealand which came into force on 1.4.2003[108]; and

- The Building and Construction Industry Security of Payments Act 2004 of Singapore which came into force on 1.4.2005[109] (Singapore Act).

The word is that the Malaysian Construction Industry Development Board (CIDB) and the Institute of Surveyors Malaysia (ISM) are collaborating on a draft bill legislating compulsory adjudication for the Malaysian construction industry closely modelled on the Singapore Act.

This paper will examine some of the impact the Bill will have in the Malaysian construction industry, as and when it is passed into law. In this regard, our comments will be on the assumption that the Bill will mirror the provisions of the Singapore Act.

Essence of the Adjudication Process

[105] See Division 2 of the said Act
[106] This Act came into force in 2 stages. The administrative provisions came into force on 1.7.2004 and the adjudication regime on 1.10.2004.
[107] See Part 3 of the said Act
[108] See Part 3 of the said Act
[109] See Part III of the said Act

In essence, adjudication is a simple and straight-forward method of referring a payment dispute to an adjudicator who acts as an independent referee, by making an interim determination on the validity of payment claims[110]. Interim because parties may later re-open the issue decided by the adjudicator before the Court or through arbitration proceedings for final resolution. Unless and until the issue is so re-opened, the adjudication determination is binding on the parties.

If the adjudicator has determined that a respondent is liable to pay an adjudicated amount, the amount must be paid within the period prescribed in the statute[111]. If the respondent doesn't pay, the claimant will be entitled to take prescribed enforcement measures which may include a lien over unfixed materials, suspension of works and/or obtain leave to execute the determination as if it were a judgment debt.

Briefly, the mechanics of the adjudication process prescribed by the Singapore Act is as follows:

- Once a progress payment falls due and it is not paid by the respondent, the claimant may issue a payment claim to the respondent[112];

- The respondent may pay up on the claim, or alternatively, dispute the payment by issuing a payment response setting out reasons for his objections or refusal to pay[113];

- If the respondent fails to pay, the claimant may give notice of intention to apply for adjudication of the payment claim[114];

[110] The party claiming payment in the adjudication will be referred to as the claimant while the party from whom payment is sought shall be referred to as respondent.
[111] The Singapore Act prescribes 7 days or such other period of time as determined by the adjudicator – section 22(1).
[112] Section 10 of the Singapore Act.
[113] Ibid, Section 11.
[114] Ibid, Section 13(2)

- If the respondent still refuses to pay, the claimant may make an adjudication application[115];

- Within 7 days of receipt of the adjudication application, the authorized nominating body (appointed by the Minister) must nominate an adjudicator and inform the parties of such nomination[116];

- Simultaneously, within 7 days of receipt of the adjudication application, the respondent must serve his adjudication response[117];

- Once the 7-day time limit to serve the adjudication response has expired, the adjudication commences[118];

- The adjudicator may set deadlines for submission of documents by the parties, call a conference of the parties and issue other directions for the conduct of the adjudication[119];

- Within 7 days of the commencement of adjudication, the adjudicator must make a determination on the adjudication application[120].

Rough Justice

Adjudication has earned itself the nefarious description of dispensing "rough justice"[121] and being a statutory "quick fix". As you can see, the negative label stems

[115] Ibid, Section 13(1)
[116] Ibid, Section14(3)
[117] Ibid, Section 15(1)
[118] Ibid, Section 16(1)
[119] Ibid, Section 16(4)
[120] The 7-day time limit applies in cases where the respondent has not served his payment response and adjudication response. If the respondent has duly served these documents, the adjudicator has 14 days from the commencement of the adjudication to make his determination. Parties may also agree to extend time for the adjudicator to deliberate – section 17(1) of the Singapore Act.
[121] Sir Michael Latham's description of adjudication in his Report "Constructing the Team" (1994)

from the fact that an adjudicator would hardly have had the opportunity to thoroughly consider all issues, weigh all the evidence (which are routinely bulky in a construction dispute) and give parties a fair hearing in the short window he has to reach a decision on the rights of the parties in the dispute[122].

Time Constraints & Procedural Fairness to Parties

Respondents are often disadvantaged by the truncated period allocated for them to respond to the claim, especially when compared to the claimants who, by virtue of being the initiator of the adjudication process, may have had the benefit of weeks or months of preparation time. Time constraints inherent in the adjudication process can severely dilute the respondent's rights of natural justice that entitle him to have a reasonable opportunity of presenting his case.

English Judges have ventured to hold that the need to uphold the principles of natural have to be tempered by the time restraints of the adjudication process and the provisional nature of the decision[123]. Whilst it may be so, a prudent adjudicator ought to, in determining the dispute, give due regard to the fact that respondent may not have had a sufficient opportunity to answer the case presented to him.

Complexity of Issues

A payment claim can relate to payment of liquidated and ascertained damages (LADs), payment for variation work and loss and expense. Validity of these types of payment claims cannot be determined without due verification of the propriety of extensions of time, critical or dominant delay factors and culpability between the parties for the delay.

[122] In fact, the criticism emanates from the United Kingdom where an adjudicator has a comparatively generous period of 28 days to decide on the dispute – Regulation 19(a) of the Scheme for Construction Contracts Regulations 1998. What more the window period of 7 days prescribed by the Singapore Act.
[123] Try Construction Ltd v Eton Town House Group Ltd [2003] BLR 286 at p. 292 para 50.

The task of determining these issues within the prescribed 7 or 14-day period[124] in a construction project of sizeable portion hardly seems humanly possible. The propensity for error increases exponentially. One might argue that the interim nature of the adjudicator's decision waters down the prejudicial effect of the error. Yet, there may be situations where an adjudicator makes an erroneous decision on these complex issues and the claimant suspends works on grounds that the respondent has not paid the adjudicated amount[125]. If the Courts or the arbitral tribunal reverse the adjudicator's decision, should the suspension also be considered wrongful and damages awarded to the respondent for the wrongful suspension[126]? Could not the claimant argue that he was justified in suspending works since he was merely enforcing the determination of the adjudicator by an enforcement method prescribed by the Act? Who should bear the risk of being wrongly out of pocket until final resolution is achieved through the Courts or arbitration?

To ease his burden, an adjudicator may direct the appointment of an independent expert[127] to assist in difficult areas such as programming or methodology. However, the effects of the parties' follow-on actions from the adjudicator's determination can have a deep financial impact in the final outcome of the dispute resolution.

Evidence Management and Presentation Tools

The time restraint to complete adjudication imposes considerable pressure on an adjudicator to limit the quantity of documentation presented to him to consider. It is perhaps in this arena of speedy justice that it becomes critical for parties to utilise the

[124] Or even the 28 days in the U.K. for that matter.
[125] Suspension of works is expressly permitted by the Singapore Act if the respondent does not pay up the adjudicated amount – see section 23(1)(b).
[126] Andrew Bartlett QC, in a talk given to TECBAR and SCL on "Construction Adjudication – Some Unresolved Issues" on 18.1.2000.
[127] Section 16(4)(d) of the Singapore Act allows the appointment of an independent expert to report on specific issues relevant to the adjudication.

best and most reliable tools available to put forward their evidence in a manner that is easily understood and which produces results that are concise, reliable and fast.

Programming software such as Primavera go along way in assisting parties to manage and update the work program when delaying events occur. Once information of the estimated delay is keyed in, the Primavera program charts out the necessary adjustments to the time floats and critical path of the construction. In large and complex projects which have hundreds of tasks and various concurrent delaying events during the construction stage, the software reduces substantially the complexity of updating the work program. Guess work is reduced and the adjudicator can be confident that any determination by him in reliance on such a program could not be inferior to a determination without such aids.

Whither the Traditional Dispute Resolution Mechanisms?

In a survey conducted by Knowles, U.K., 78 parties answered that they had treated the adjudicator's decision as final as opposed to only 7 who went on to test the decision by final resolution in the Courts or the arbitration process[128]. This is a remarkable result considering the gap was much narrower between the parties' feedback in terms of their satisfaction as to the performance of the adjudicator[129]. In other words, even though *X* number of parties may have been dissatisfied by the adjudicator's determination, a large majority of these parties were happy to live with the adjudicator's decision and didn't see the need to obtain final resolution from the Courts.

This statistic is perhaps the best testimony of the effectiveness of the adjudication scheme in not only providing immediate relief to the wronged party but also in preventing protracted and expensive litigation between the parties by reason of the

[128] Extracted from "Adjudication – What do the Parties Think?" published by Knowles at www.jrknowles.com/global/news/legal_bulletins/legal_bull_res.php
[129] In the same survey, 60 answered they were satisfied while 24 answered they were not.

"cooling-off" period between the adjudication and the completion of the project. Often times, sanity returns after the initial burst of anger and frustration over the unfair treatment suffered at the hands of the other party and the litigation that was thought to be the only vindication for the innocent party doesn't seem as compelling anymore when the project is completed and bottom lines drawn.

In the broad picture, adjudication has shown itself to be conducive to the overall purposes of justice. Granted that the full rights and wrongs may not be known at the time the adjudicator is called upon to make his interim determination, but the interim decision goes a long way in moving a project along towards completion. Resources are saved and additional expenses caused by delay are avoided. The benefit is shared by all parties in the contractual chain.

The Risk Management of Proceeding with Arbitration or Settlement

This is an exercise in balancing the probabilities of successes with the amounts claimed or faced (there should also be a consideration of variable quantum recoveries and the range of success percentages) and the cost of proceeding till conclusion.

It is to be understood that any assessment of the value of proceeding with an arbitration, is not a perfect science. It is however the best commercial presentation of the approach that ought to be taken.

One method is to utilize the overall success rate suggested by the legal representatives to the quantum claim and add that to the overall loss rate applied to the likely costs[130]. This simple method is described below:-

> *If the legal representative suggest a 50% success rate to a claim for RM100,000.00 and the legal costs (including arbitrator's fees) and the other party's legal cost is estimated to be RM60,000.00 then the assessment is (0.5 x RM100,000.00 + 0.5 x - RM60,000.00 = +RM20,000.00) is RM20,000.00. It must then be recognized that the other party is exposed to an assessment of (0.5 x - RM100,000.00 + 0.5 x –RM60,000.00 = -RM80,000.00) of loss of RM80,000.00. Therefore as your own cost outlay is RM30,000.00 but your assessment shows RM20,000.00 as expected overall outcome, then the answer is simple, it would be a poor risk management stratergy to proceed with an arbitration and a settlement should be attempted. Bearing in mind the other party has an exposure of RM80,000.00, a settlement above RM20,000.00 should suit both parties and could likely be achieved.*

The formula gets more complicated when other normal variable factors are thrown in such as differing percentage of success to quantum recoverable, the recovery of costs

[130] Michael O'Reilly, Risk, Construction Contracts and Construction Disputes, 1995 11 Const Law Journal pg 343

is not 100% and there are likely counterclaims. The possible method would then involve:-

Assessing the likely successful quantum recoverable based on a range of percentages either attached to the quantum on a reducing scale or on a scale developed based on differing heads of claim and alternative claims and also the strength of the underlying evidence and documentary substantiation. An example would be:-

RM0 to RM20,000.00 with prospects of 10%

RM20,000.00 to RM40,000.00 with prospects of 25%

RM40,000.00 to RM60,000.00 with prospects of 40%

RM60,000.00 to RM80,000.00 with prospects of 20%

RM80,000.00 to RM100,000.00 with prospects of 5%

(RM10k x 0.1) + (RM30k x 0.25) + (RM50k x 0.4) + (RM70k x 0.2) + (RM90k x 0.05) = RM47,000.00

On the cost, if the advise is that 2/3 is recoverable, then the irrecoverable portion will be RM10,000.00 (on RM30,000.00 legal fees)

So the expected recovery could be RM37k, then the same formulae is applied to the counterclaim and then deducted from the expected recovery.

If there is an offer for settlement, a formulae can be used to assess cost and loss exposure by applying the percentage of achieving a higher success quantum wise but factoring the percentage to the exposure to costs. If the offer is RM20,000.00, then:-

(RM20k x 0.9) + (RM50k (2/3 for the other party cost) x 0.1) = RM23k

Therefore if expected recovery is RM47k and expected cost is RM23k, then the expected outcome is RM24k. Therefore an offer of RM20k looks close to being attractive

There are various simulations and models that can be used in assessing this particular risk[131].

[131] See O'Reilly MP and Mawdesley MJ, The Management of Disputes: a risk approach [1994] ADRLJ 260

MULTIPLE PARTIES – THE PROBLEM WITH ARBITRATION

Arbitration

Arbitration is an alternative to litigation in Court. The arbitral tribunal, usually consisting of 3 arbitrators or single arbitrator appointed by mutual consent, will hear and determine the dispute between the parties. This recourse to arbitration is only available if parties expressly agree to it, by consensus. It is from this consensus that the arbitral tribunal derives its authority. Without such agreement, either party is not entitled to compel an arbitration.

Construction disputes

It is not an unknown fact that mega/huge construction projects inevitably involve participation of various parties and professionals of various disciplines, at various levels, for example the employer or the owner, the designer (engineer or architects), the superintending officer, the main contractor, the nominated sub-contractors or sub-contractors and sub-sub-contractors, so on and so forth. Further, the sub-contractor may have also appointed a separate designer for various aspects of their work under the sub-contract.

There is a myriad of legal relationships amongst these parties. More often than not, the relationship between these parties may not be a direct contractual relationship but rather inter-connected by various contracts between one another. At the end of the day, there may not be any privity of contract between the owner and the sub-sub-contractor, for example, although eventually it may be the sub-sub-contractor's works that the employer finds fault with.

Take this scenario as an example. The employer may have appointed the main contractor, under say contract A. The employer may also simultaneously appoint the designer of the project to provide design drawings to the employer for issuance to the main contractor for construction, under say contract B. At the same time, the designer may also be required to supervise the works carried out by the main contractor, wearing the hat of the supervising consultants.

Their respective contracts, A or B, may recognise the designer's obligation to provide construction drawings for issuance and supervision of works by the designer. Legally, there is no contractual relationship (privity of contract) between the main contractor and the designer or supervising consultants. In these circumstances, it would not be possible for the employer to insist on a 3 way arbitration should the dispute involve the designer and the main contractor.

A classic example would be where the main contractor alleges defective or incomplete design drawings caused delays and loss and expense. In such a case, the main contractor may have no choice but to make a claim against the employer for a breach of contract. The employer would then have to commence its own claim against the designer. An alternative claim under common law tort against the designer may not be attractive as there is a need to prove the existence of various duties on the part of the designers. The law of tort on this area is still in a state of flux at the moment.

Proceedings in Court

Traditionally, such a dispute would be brought before the Court. In Court, the employer could utilise the third party procedures prescribed by the Rules of the High Court (Order 16) and apply to include the designer as a third party to the proceedings commenced by the main contractor, and claim an indemnity should the Court make a finding in favour of the main contractor on its allegations of defective or incomplete design drawings.

With the involvement of the designer as a third party, the Court will hear the matter at one go, evidence can also be taken as a whole, from both the main contractor and the designer directly. The Judge would then have the benefit of hearing allegations and defences as raised by the parties themselves and not *via* the employer. There would be no fear of conflicting findings or inconsistent judgments.

Multi-party or consolidation of arbitration – not available

However, where contracts contain arbitration clauses, the parties are bound to have the dispute resolved by arbitration.

The position of the employer is then jeopardized as there is no equivalent of 'third party proceedings' in arbitration. Jepordised because in reality the party who ought to defend against the main contractor's allegations is the designer, and not the employer who have relied in toto on the expertise of the designer.

The previous Malaysian Arbitration Act 1952 does not provide for the consolidation or the concurrent hearing of 2 separate arbitrations. Unless all the relevant parties consent to the consolidation or the contracts provide for a concurrent or multi-party arbitration, the common law does not allow such forms of arbitration on the basis that arbitrations are a private affair between the parties or the fear that it may open the floodgates and thus defeat the purpose of an arbitration i.e. quick and efficient resolution of disputes. See ***Oxford Shipping Co. Ltd. v Nippon Yusen Kaisa (The 'Eastern Saga') [1984] 2 Lloyd's Law Reports 373***, where it was held that unless all parties consent, the arbitrator has no power to order a consolidation or a multi-party arbitration even though the issues raised in the separate arbitrations are so closely related that they may be described as being a 'mirror image' of each other.

Substantive and procedural injustice

If the designer agrees to participate and defend against these allegations, by attending as witnesses, as well as to indemnify the employer in the event that the employer is found liable, the employer is in a sense protected. This utopian dream hoever remains elusive. The usual case is, the employer is left in a precarious position of being unable to advance the best defence against the main contractor and simultaneously losing the arbitration with the designer.

In ***Abu Dhabi Gas Liquefaction Co. Ltd. v Eastern Bechel Corporation and Chiyoda Chemical Engineering & Construction Co. Ltd. [1982] 2 Lloyd's Law Report 425***, the issue arose as to whether there should be separate arbitrations between the employer and main contractor on the one hand and between the main contractor and the sub-contractor, on the other hand, for defective works. Lord Denning M.R., after recognizing the need to avoid an inconsistent award, appointed the same arbitrator for both the arbitrations and allowed the arbitrator to direct the conduct of the proceedings to ensure that neither party is prejudiced.

The solution in the ***Abu Dhabi*** case though a welcomed attempt, will not by itself resolve all the inherent risks or difficulties. The inherent risk of an inconsistent award and the evidential difficulties faced by the party 'in between' like the employer in our scenario, remains unresolved.

This is clearly seen in the case of ***Interbulk Ltd v Aiden Shipping Co. Ltd. (The "Vimeira") [1984] 2 Lloyd's Law Report 66***. This case is, unfortunately, a good example of the inherent dangers of inconsistent awards even though the same arbitrators were appointed to prevent inconsistency.

In the ***Vimeira***'s case, the owners of the ship 'Vimeira' claimed against the charterers in arbitration (the head arbitration) for damage to the ship's rudders. At the same time the charterers made a similar claim against the sub-charterers (the sub-arbitration).

Despite having appointed the same arbitrators, the head arbitration concluded with a finding of liability against the charterers on the basis that the dock was not wide enough for a ship the size of Vimeira to turn safely. The charterers applied to set aside the award on the basis the arbitrators decided the dispute on a point that was never raised as an issue in the arbitration.

In view of this, the charterers then applied to amend their claim in the sub-arbitration to provide for the dock's inadequate turning area. As the sub-charterers were alerted of this issue, evidence was adduced against it. The same arbitrators concluded that the turning area, though restricted, was acceptable (at variance with the head arbitration) but nevertheless found against the sub-charterers as there were unknown shallow areas of mud or even stones settling at the berth area, making it dangerous and therefore insufficient to suggest pilot error as the main cause of the damage. The sub-charterers also applied to set aside the award on grounds that the decision based on the argument of unknown settlement of the mud or stone was never canvassed at the hearing.

Lord Justice Robert Goff in the Court of Appeal, in remitting the head arbitration award and dismissing the appeal against remission of the sub-arbitration award, recognized the dangers of such inconsistent awards in such 'split arbitrations' and urged legislators to make appropriate amendments to the Arbitration Act to give a possible solutions (citing Hong Kong arbitration legislation as an example). Lord Justice Ackner, in agreement, pointed out that the very same arbitrators having found that the dock was unsafe for Vimeira, decided otherwise when presented with fresh evidence by the sub-charterers that the dock was sufficiently wide even for larger vessels.

It was even suggested that the arbitrators were painfully trying to ensure an award consistent with that in the head arbitration.

Further evidential problems may arise by the fact the designer or the main contractors are not compellable by court subpoena to attend either arbitrations, for instance where the designer and/or the main contractor are foreigners, who are no longer resident within jurisdiction. The employer may be left in a lurch as they would not have the designers to defend their design and at the same time, they would not have the main contractors in the arbitration against the designer.

There may also be instances as seen in the ***Vimeira***'s case, where further material evidence is only adduced at a later arbitration on the point decided in the previous arbitration.

Possible Solution ?

The above concerns are easily resolved by having a multi-party or concurrent arbitration before one and the same set of arbitrators hearing the matter at one go. It is said to be the only sensible solution (Mustill and Boyd "*Commercial Arbitration*"). Despite demands for justice and a fair hearing, in reality the other party, usually the party not prejudiced, may not wish to accommodate by agreeing to a concurrent arbitration. Even if the party agrees, there is still need to obtain the intended 'third party's' agreement, who similarly may not be as accommodating.

Court Supervisory Jurisdiction

In the local context, even though the previous Malaysian Arbitration Act 1952 did not provide for a concurrent or a multi-party arbitration, the Malaysian Court of Appeal in ***Bina Jati Sdn. Bhd. v Sum-Projects (Bros) Sdn. Bhd. [2002] 2 MLJ 71***, may have provided a precedent for a possible solution. The Court of Appeal held that the Courts retain a supervisory jurisdiction over arbitrations and arbitrators (by virtue of 25(2) of the previous Arbitration Act 1952, paragraph 11 of the Schedule to the Courts of Judicature Act 1964 and also under Order 92 rule 4 of the Rules of the High Court to

prevent injustice) and in that case, revoked the authority of the appointed arbitrator on grounds that the arbitrator's scope of authority does not include hearing allegations of fraud.

More importantly, the Court of Appeal also went on to state in no uncertain terms that the Courts may oust the jurisdiction of the arbitrators not only in cases of fraud alone but also (i) to prevent a multiplicity of proceedings, (ii) where third parties, who are outside the arbitration clause, are affected by virtue of the allegations raised in the arbitration, and (iii) where all issues ought to be tried by one single tribunal.

This suggested a solution in the converse. If the arbitration procedure does not cater for a concurrent or multi-party arbitration, then litigate in the Court where there is the third party procedure available to ensure that all affected and concerned parties are before the Court.

Unfortunately, subsequent decisions have limited the ***Bina Jati*** decision to the facts of the case as falling squarely within section 25(2), which allows the Court to revoke the arbitrator's authority where allegations of fraud are raised. Subsequent decisions have also limited the right to revoke the arbitrators' authority to those specifically provided for by the previous Malaysian Arbitration Act, i.e. cases involving allegations of fraud or misconduct of the arbitrator. It was also held that further observations by the Court of Appeal are merely obiter, thus not binding.

In the same vein, it must be pointed out that the ***Oxford Shipping*** case, which may be the only reported decision on an application for a concurrent arbitration, decided only on the limitations of an arbitrator's authority. It did not touch on the jurisdiction of the Court to order a concurrent or multi-party arbitration.

Interestingly, in ***The University of Reading v Miller Construction Ltd and David Sharp [1994] 75 BLR 91***, the Court held that it has powers to grant an injunction to

restrain arbitration proceedings if (i) there is no injustice to the claimant in the arbitration and (ii) it is satisfied that the continuance of the arbitration would be oppressive, vexatious or an abuse of process. This is similar to ***Bina Jati***'s case.

In that case, an injunction was granted to restrain arbitration proceedings between the university and the main contractor until disposal of the suit in Court filed by the university. The Court was of the view that the issues could not be satisfactorily resolved without the involvement of the architects and the engineers, who are defendants along with the main contractor in the Court suit. It was also acknowledged that the claim in Court was wider as it also included the main contractor's obligations under a Preliminary Services Agreement that was not subjected to an arbitration clause.

However, the English Arbitration Act 1996 has effectively closed the door on any possibility of having a concurrent or multi-party arbitration by expressly requiring consent of the parties, Section 35.

Arbitration law – other jurisdiction

Hong Kong arbitration legislation not only recognized the problem but also provided a sensible solution to it. Section 6B of the Hong Kong Arbitration Ordinance (Cap 341) expressly provide the Courts with the power to order a concurrent arbitration where (i) there is some common question of law or facts which arises in both or all of the arbitrations; or (ii) the rights to relief claimed therein are in respect of or arise out of the same transaction or series of transactions; or (iii) for some other reason it is desirable to make an order for a concurrent arbitration.

Similarly, in Australia under Section 26(1) of the Australian Commercial Arbitration Act 1984, the arbitrator is given the power to order a consolidation of separate arbitrations, or to have the arbitrations heard together or one after another, or to have

any of the arbitrations stayed until determination of any one of the arbitrations. The power is exercised (section 26(3)) where common questions of law and fact arise in all of the arbitration proceedings; or the rights to relief claimed in all proceedings are in respect of or arise out of the same transaction or series of transaction; or for some reason it is desirable to make such orders. If the arbitrator refuses such order, the parties may apply to the Court.

In New Zealand, a similar power is provided to the arbitrators and the Court under the Second Schedule of the Arbitration Act 1996. The arbitrators or the Court is empowered to consolidate arbitrations; or hear arbitrations together or one after another; stay any of the arbitrations until determination of any other arbitration upon showing the same requisite requirements in the Australian Act.

These are models which should be considered and emulated by the other jurisdictions to ensure substantive and procedural justice is achieved.

The Malaysian Arbitration Act 2005

The recent Malaysian Arbitration Act 2005 has brought about some changes. Part III of the Act is entitled 'Additional Provisions Relating to Arbitration'. The first section under this Part is Section 40(1) which provides that the parties by agreement may consolidate or have a concurrent arbitration, on such terms as agreed. More importantly, Section 40(2) goes on to say that unless parties agree to confer the powers to the arbitral tribunal, the tribunal has no power to order a consolidation or a concurrent arbitration hearing.

The Act makes these Part III provisions applicable in a domestic arbitration (unless party opt out) while the same provisions apply to international arbitrations only if the parties opt in.

The question is, if parties opt out of Part III, either in an international or domestic arbitration, does it mean that by doing so the arbitral tribunal would have the power to consolidate or order a concurrent arbitration hearing because parties consent to the consolidation is no longer necessary ? The Act was drafted in a way to suggest that an arbitrator inherently/originally has such powers, as otherwise, Section 40(2) would be redundant.

The need for justice – substantive and procedural

It is submitted that every litigant is entitled to substantive and procedural justice whether in Court or arbitration, and it should not be dependent on the opponent's or the third party's sense of fairplay or justice. An agreement to refer to a dispute to arbitration ought not to be construed as a waiver of the party's rights and expectation of procedural and substantive justice. The Courts or the arbitrators must be empowered to ensure that either party is not handicapped substantively or procedurally, even if it entails compelling a multi-party or concurrent arbitration. The need for a quick resolution of a dispute must not be at the expense of justice. In any event, the conduct of the arbitration at the hands of capable arbitrators can proceed with the same speed and efficiency by identifying the true party responsible to defend these allegations.

The lacunae in arbitration, in the words of Lord Justice Staughton in ***The Amazonia (1990) 1 Lloyd's Law Reports***, is '*deplorable*' and must be rectified with sufficient provision to ensure substantive and procedural justice.

Early Involvement of Legal Representation and their Technology

When to bring in the external legal representation and how effective can they be assisting a resolution of the dispute, or driving a dispute resolution efficiently, cost-effective and successfully, has been one of the million dollar question for in house legal counsels.

Prior to disputes arising, does an owner seek the involvement of legal counsel in the drafting of the conditions of the proposed contract. The answer is yes only if the allocation of risk exercise has been carried out and there are clear instructions to the counsel on the allocation of risk. Otherwise, the tendency of external counsel is to be an advocate and draft pro-owner conditions that commercially may not serve the objectives of the owner.

It has been recognized that too often, the external legal represntation pays insufficient attention to the evaluation of the dispute (facts and technical matters) in the early stages, thus leading to eventually an increased overall costs and lengthier dispute resolution process[132].

The Technology During the Arbitration

This writing outlines a few vital aspects of document management strategies through a hands-on experience of a multi-task Arbitration/litigation soft-ware programme in dealing with voluminous documents of a huge Arbitration suit in Year 2005 lead by our leading counsel Mr. Belden Premaraj of Messrs Sivananthan. The aspects range

[132] Heilbron Report (Civil justice on trial: the case for change) by the Independent Working Party of the General Council of the Bar and the Law Society 1993

from the strategy of getting the right software system for implementation of document management linking to other Arbitration/litigation tasks to employing a team of legal practitioners assisted by unfailing diligent and faithful paralegals working closely together to ensure sufficiency of tools and strategies in fighting the case.

Besides the complexities of the Arbitration suit itself, the documents collection which does not just originate from the client, particularly in the construction field, there will be documents from various parties and different categories of documents. When put together these categories of paper documents which ranges form e-mails to shop-drawings, all that one can visualize is a haunting daunting document monster comes haunting day and night. To add to the much dreadful experience was the post discovery process period where further categories of thousands copies of documents were discovered from the opponent. One special tip, is never ever agreed to the opponent that you agree to piecemeal fashion of documents delivery. Believe it, it can put you to endless unnecessary protracted futile arguments with the opponent and further tension in the document management process. When you have finally sorted out all the paper documents, you would have been zombified by then.

However, this One Mammoth case was not denied from the use of a sophisticated software tools, namely Summation; a powerful scanner; and a high end scanning software. The applications of these tools involves complex systems which were still daunting especially during the construction of the database, no doubt the end results provide many benefits that can assist the case management efficiency.

STRATEGIES

Hire the right team of legal assistance and paralegals. They must be highly motivated, diligent, perseverance and faithful in the entire process in developing the case. This criterion is paramount without which the best technology tools available may not be able to guarantee the entire success of the case.

It is of paramount important in choosing the right technology tools to assist in document management. The tools should contain various features in putting the electronic documents in order. Some of the features for scanning and coding should include the following:-

- To be able to capture documents and converting them into clear digitized images;
- The ability to add images
- The ability to import and export documents from the system;
- To be able to OCRed documents for further searches;
- Instant retrieval of relevant documents via document coding;
- To be able to copy case;
- Multiple user to access the same files at the same time; and
- Must have a System security.

Besides the scanning and coding process, the tool should also provide important features to link to other Arbitration/litigation process.

- Production tools;
- Multiple search functions;
- Prepare depositions;
- Link issues;
- Allows users to select documents management system folders into a briefcase and transfer the briefcase to another computer;

Other common features of the technology should also encompasses the following:-

- Enable user to carry important documents anywhere for convenient viewing;
- Addressing the needs of the case(s) involved by comparing it to the cost of the system, storage space, licenses, server size, network constrains and upgrading availability; and
- Types of training programmes tailored.

Drawing up a Chronology of the case at an early stage is vital as it assists and to ensure complete discovery. Determine facts which are disputed and which still need sources so to enable the team to source the specific documents required.

Requesting of specific documents can be identified by filling in the missing gaps question in the Chronology. Be also alert of inadvertent production of privileged documents;

Some planning is required prior to the scanning and coding of documents into the system. This enables retrieval of relevant documents fast, easy and efficient. Document identification; arrangements of documents, as documents discovered in construction litigation involves multiple parties and various volume of materials are exchanged, clear instructions on consistency on the methodologies of coding is to be delivered to key players involving in establishing the core databases as this technology tools are highly sensitive to inconsistency of data entries.

Collate all documents received during discovery process, eliminate duplicates and irrelevant documents. Do not agree to the piecemeal delivery of discovered documents as this caused much struggle in the process of adding images to the programme.

To avoid loosing of data entered and, the wasting of time and energy to redo the entire process, always backup the core-database when attempting on a new feature of the tools in the process.

BENEFITS OF TECHNOLOGY TOOLS

The process begins with the conversion of paper documents and records to electronic files. Digitizing through scanning and coding of documents that eliminates the many obstacles created by paper-labour-intensive duplication, misplaced originals and the inconvenience of retrieving files from remote locations.

The technology tools provide the ability to import word-processor files into the system. An example was, document-indexes that have been created earlier in the word processors can be imported into the coding fields. As such, it saves time and energy of having to re-keying in of information into the core-database.

The applications of its production tools expedite the case management processes by allowing instant access to information, greater collaboration within the legal team and paralegals, and client. The system can be used for creating sequentially numbered deposition, or exhibits, numbered sets for document bundles. An example would be when there are two requests, one for all documents supporting a claim that the Respondent violated the construction procedure and another on all disputed shop drawings. The tools have the ability to paginate the two requested sets sequentially.

The technology tool also offers flexibility to global search across different types of data stores simultaneously. In addition to the integrated search, the tool also allows searches within a specific data store and an “Any TextR” or fuzzy search can be

conducted if the documents are scanned with Optical Character Recognition (OCR), AND OTHER WIDE RANGE OF Boolean searches, which searches on specified fields. Further this searches located can be sent to the case organizer where the items can be sorted out and to create a chronology, organize a trial books and adding notes.

As such, the process also makes it possible to manage thousands of documents and retrieve the right one in seconds during the preparation of the case. It provides sharing of documents among the team and client. One can also access documents while traveling and also away from the office or providing the client copies of the requested documents instantly.

It also has the ability to copy case when a user simply wants a copy of the case to be work with. When the attorney is away from the office, he may make changes to the database, using the mobile license, and the team of lawyers and paralegals in the office will continue updating the network case using the network license. When the attorney returns to the office, he would like to upload any changes made to the case on the mobile license to the network case. This can be achieved by merging the changes to the network case.

NOTES OF HANDS-ON EXPERIENCE

Scan according to the range of materials including charts, plans and drawings and their sizes. Editing the sizes of the images scanned is not an easy task when a huge volume of documents are involved.

Always backup database prior to making any alteration of editing.

Scrutinize data entry at random for accuracy and consistency.

Make attorney's notes to be included in the technology tools.

Mark documents or exhibits.

Ensure to sort docdate when using production tools to bundle documents and paginations.

Save searches and mark or briefcase documents to be presented through Power Point technology.

Why an Essential tool?

- Instant retrieval to key documents;
- full-text imaging with PDF support;
- OCRd for full – text search capability;
- linking a database to each document;
- Briefcase requested documents;
- Sort documents in various commands;
- Allows batch processing;
- Organised documents bundles efficiently;
- Accurate paginations of documents;
- Allows renumbering of documents;
- Allows annotations;
- Allows note making and marking of documents;
- Important as a "travel aid";
- Integration of disposition and pleadings.

Difficulties faced

- not user friendly at the database entry stage, may discourage users and also increase training costs;
- the system does not allow pages to be rearranged and need much afford to add a document or to correct mistakes that may have occurred in the organization of a file;
- difficult to correct mistakes made during scanning;
- tedious steps in flagging of documents;
- unable to display more than one document at a time;
- Errors often occur during batch searching;
- Image printed differs in size compared to original documents;
- Does not copy case automatically, ie from a network case to a local case;
- Difficulties in re-installation of the system into another computer;
- Expensive support and maintenance;
- Importation of the index from the word processor is speedier that keying in the particulars according to specific forms allotted in the technology software. However, the main limitation in this process is the tedious flagging of every individual document.

Alternative Document Management Tools

1. Concordance;
2. Knowledge trees;
3. Lazerfiche;
4. Adobe Acrobat 7.0 for Legal Professionals

Techniques To Expedite Arbitration Process

There are some of the well-known processes or techniques employed by international arbitrators to ensure that eventually the pitfall of “justice delayed is justice denied” does not restrain the growth of international acceptance towards employing arbitration as an effective means of dispute resolution.

Whilst there are no statistics to show really how effective any or all of the techniques described herein, nevertheless there are accounts by individual arbitrators and lawyers on how successful these techniques are if introduced.

The marriage of the common law system and civil law system in international arbitration has seen the use of technique quite common to the civil law system whilst still ensuring that the essence of the adversarial system is still maintained albeit in a limited fashion.

The system are:-

- The use of pleadings is no longer seen as necessary. Merely an early definition of the issues by the parties with reference to the crucial and necessary documentation allows the case management time frame to be truncated.
- The terms of reference should be then settled. This essentially sets out the case to be decided by the arbitrator(s).
- Disclosure of documents is employed rather than discovery. Only limited request for production of documents that are arguably material, is allowed.
- Expert evidence by leave so that the arbitrator may ensure that only areas which truly deserve and require expert opinion is adduced.
- Experts are required to meet and report jointly.

- Bifurcation of the terms of reference for complex arbitrations by having facts determined separately from the law and liability determined separately from the quantum or damages.

- Defined limited time for hearing, either employing a chess-clock arbitration hearing or other methods. This however requires evidence in chief to be given by way of witness statements with no further addition at the hearing. In order to ensure that the cross-examination is then limited to the most crucial matters of controversy that require oral input, witness statements in reply are allowed and even possibly further statement in reply to the reply. Therefore by employing a tiered witness statement process, some of the issues raised in the first instance may be sufficiently negated or established in order for counsel to feel safe in not cross-examining on the issue. Needless to say, for this technique to be effective, the arbitrator(s) must have read and understood the witness statements before the hearing commences.

- Hot-tubing of witnesses or experts. This is by having a witness conferencing where the issues dealt with by both witnesses namely experts are dealt with together. The expert's cross-examination is heard back-to-back and they are encouraged to openly discuss with each other at the hearing on their differences. It is believed that such truly independent persons are more likely to concede to a point when confronted by the opposing expert and when faced with an open discussion.

- If parties agree, and if it is possible, the arbitrator(s) are to give a preliminary view on their thinking as to the likely determination of particular issues and the dispute as a whole. This can also be done at the end of the hearing before the award is actually written and issued. The reason for this technique being employed before the hearing is to allow the counsel to know what issues and evidence he should be trying to establish. Further whether before the hearing

or after the hearing, if the view is presented before the parties themselves, there is a likelihood that a settlement may be achieved.

- The time taken for the writing and issuance of the award is to be booked by the parties.