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Using NEC contracts to manage risk and avoid disputes

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NEC contracts provide an excellent basis to encourage and support risk management through all stages of any project or service provision. Partly because they are good for risk management, NEC contracts have anecdotally helped avoid disputes. After more than 12 years of use for possibly billions of pounds worth of work in probably tens of thousands of projects in more than 20 countries there remains only one piece of case law relating to the use of the NEC. The aim of this paper is to explain how NEC contracts can be used to reflect the particular risk allocation intended by the parties to the contract through the use of the options within the contract. It then explains the key tools and processes in the contract for the ongoing management of risk, including the NEC's 'Risk Register' and the allocation of risk in quotations for the effects of events at the client's risk.

1. INTRODUCTION

NEC contracts provide an ideal basis to encourage and support risk management through all stages of any project or service provision. This paper explains how NEC contracts can be used to reflect the particular risk allocation intended by the parties to the contract, and then to help the parties manage risk after the award of the contract. Partly because they are good for risk management, NEC contracts have anecdotally helped avoid disputes. After more than 12 years of use for possibly billions of pounds worth of work in probably tens of thousands of projects in more than 20 countries there remains only one piece of case law relating to the use of the NEC.

This one piece of case law relating to the NEC Engineering and Construction Contract (ECC) is *Costain Ltd v. Bechtel Ltd* (2005).¹ In this the judge considered the ECC project manager's role as a certifier and suggested that the project manager, although he or she represents the employer, is bound to act fairly and in accordance with the contract. This came as no surprise to experienced NEC users as it states in the first line of the contract (clause 10.1): 'The Employer, the Contractor, the Project Manager and the Supervisor shall act as stated in this contract'.

The NEC family of contracts includes the ECC, the Engineering and Construction Subcontract (ESC), the Engineering and Construction Short Contract (ECSC), the Professional Services Contract (PSC) and the Term Service Contract (TSC) (for more detail see www.neccontract.com). The NEC's approach to risk is explained in this paper by reference to the NEC3 ECC.² This is

the member of the NEC family appropriate for implementation of a significant project and can include (any level of) design and construction. It is a contract between an employer and a contractor. The commonality of the language and principles across the entire family of NEC3 documents means that most of the principles discussed here apply also to the other contracts in the NEC3 family. In particular the structured approach to risk allocation and management is similar in all NEC contracts and can, where appropriate, be passed along the supply chain using the NEC subcontracts.

The paper will follow risk through the project and contract process and look at the following two areas.

- (a) Risk allocation in the wording of the contract
 - (i) general principles
 - (ii) estimating, pricing and efficiency risks
 - (iii) allocation and limitation of specific risks by choice of ECC secondary options
 - (iv) allocation of the risk of occurrence of other specific events
 - changes to what the client wanted – changes to the works information
 - design risk
 - weather risk
 - physical conditions risk.
 - (v) compensation events and employer's risks.
- (b) Risk management through the use and management of the contract
 - (i) risk in the programme
 - (ii) the risk register and early warning
 - (iii) allocating risk in compensation event quotations.

This paper is informed by experience over 14 years of procurement with the NEC, mainly in the UK but also in Antarctica and Dubai, in many sectors with consultant Mott MacDonald. It is also informed by providing training on the NEC for Mott MacDonald and its clients and for the NEC division of Thomas Telford, the publishers of the NEC contracts. The paper was developed from an article by the author in the NEC Users' Group newsletter³ that itself was the starting-point for developing case studies and an interactive workshop on NEC and risk management.

NEC contracts use initial capitals for 'defined' terms and italics for 'identified' terms, and this is reflected in the contract extracts in this paper. However, these terms are otherwise generally set in lower-case, non-italic type for ease of reading.

2. RISK ALLOCATION

A key aim of any contract should be the clear allocation of risk. This part of the paper shows how NEC contracts are flexible and allow the user to achieve the desired risk allocation with clarity.

2.1. General principles

Figure 1 shows schematically how, throughout the development and implementation of any project, the requirements of the work to be carried out under any particular contract are progressively refined. As this is done, uncertainty and risk are driven out by successive stages of project development and risk management. The y-axis on the figure is shown as 'Forecast outturn cost'. The 'base cost' is the best estimate of the cost of delivering the works as defined at any point in time. On top of this is shown an allowance for 'risk and uncertainty'. This might include an estimate of the cost of uncertainties – for example, in the quantity of work required – and an estimate of the consequences of specific risks that might impact on the cost of delivering the works. As indicated, the actual outturn cost will be known only when the project is completed. The concept of gradually driving out risk and uncertainty applies equally to the 'forecast time to completion' and the gradual determination by the client, up to the award of contract, of what it is that the client actually wants.

By the stage when the parties wish to enter into a construction contract for the works, they (usually led by the client) have to decide and articulate just which risks are to be carried by the contractor and which are to be retained by the client (under the ECC contract, the client, the buyer, is called the employer). Under the ECC the only events that may entitle the contractor to a delay to the 'completion date' (equivalent to an 'extension of time' in some contracts) or cause 'the prices' (the 'contract price' in some contracts) to change are called 'compensation events'. The contractor, in its bid (or negotiations) must make due allowance in the Prices and in his programme to meet the completion date for all risk events except those that are specifically stated in the contract to be compensation events and so are at the risk of the client. This is indicated in Figure 1.

The ECC is modular in structure. The contract includes a comprehensive set of 'core clauses' which include all the key project management processes – for example, those for time management, defect management, cost management and payment and change management (compensation events). The core clauses are included in any ECC contract. The contract then requires the potential parties to the contract – usually led by the client – to build up the conditions for each particular contract by selecting from a number of options within the ECC.

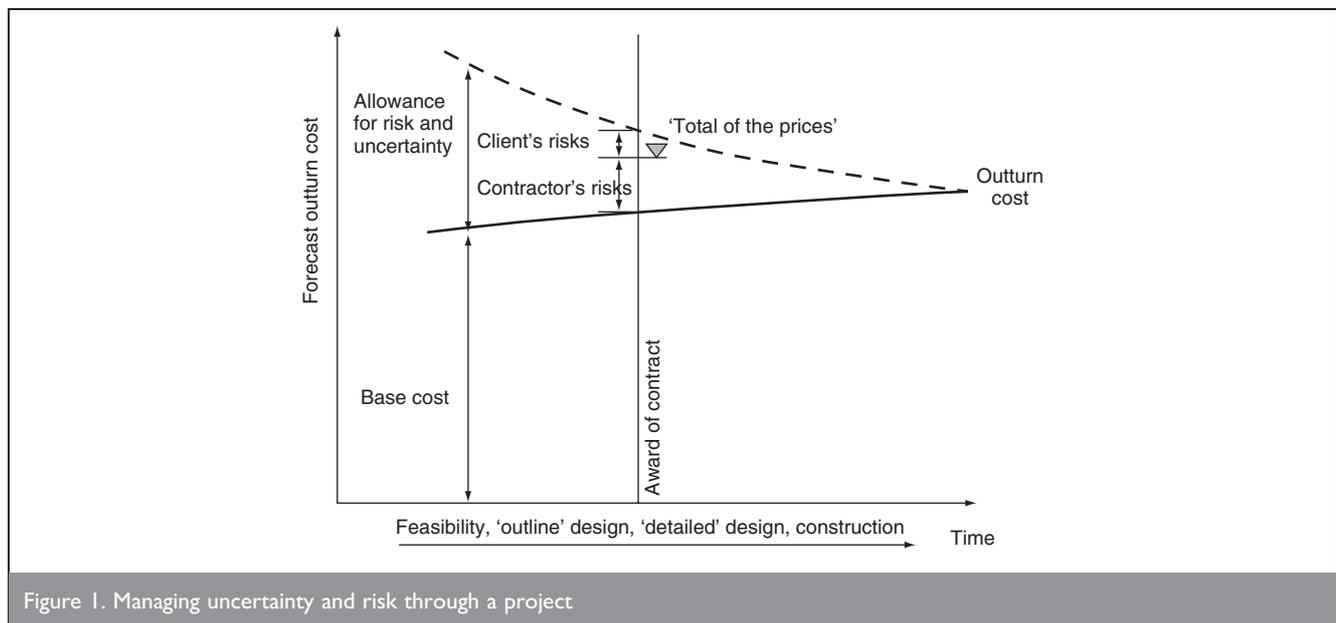
The client augments the core clauses with the following items.

- (a) One 'main option' (A, B, C, D, E or F) relating to payment. (The flexibility within the ECC with regard to payment is delivered by using the term 'prices' in the core clauses, irrespective of the main option chosen. The clauses in each main option include a differing definition of 'prices'. While the normal use of the ECC requires the choice of only one main option, the author was involved in a project where the procurement strategy required packages of work under the same contract to be allowed to be on a lump sum, target or reimbursable basis. See Patterson⁴ for details.)
- (b) One dispute resolution option (W1 or W2).
- (c) Any number of its chosen 'secondary options' (numbered X*).
- (d) Jurisdiction-specific secondary options (numbered Y*).
- (e) Additional conditions of contract (option Z).

Figure 2 shows diagrammatically how the conditions of contract for a specific ECC contract are built up by selecting options that are appropriate for the particular contract. It shows by shading an example of the options selected for one particular contract. Only the options explicitly chosen from those available in the ECC document are part of the particular contract.

The choice of options is a fundamental part of the allocation of risk in the contract.

- (a) The choice of main option effectively allocates the risk involved in estimating and pricing the work and the subsequent efficiency of providing the works.



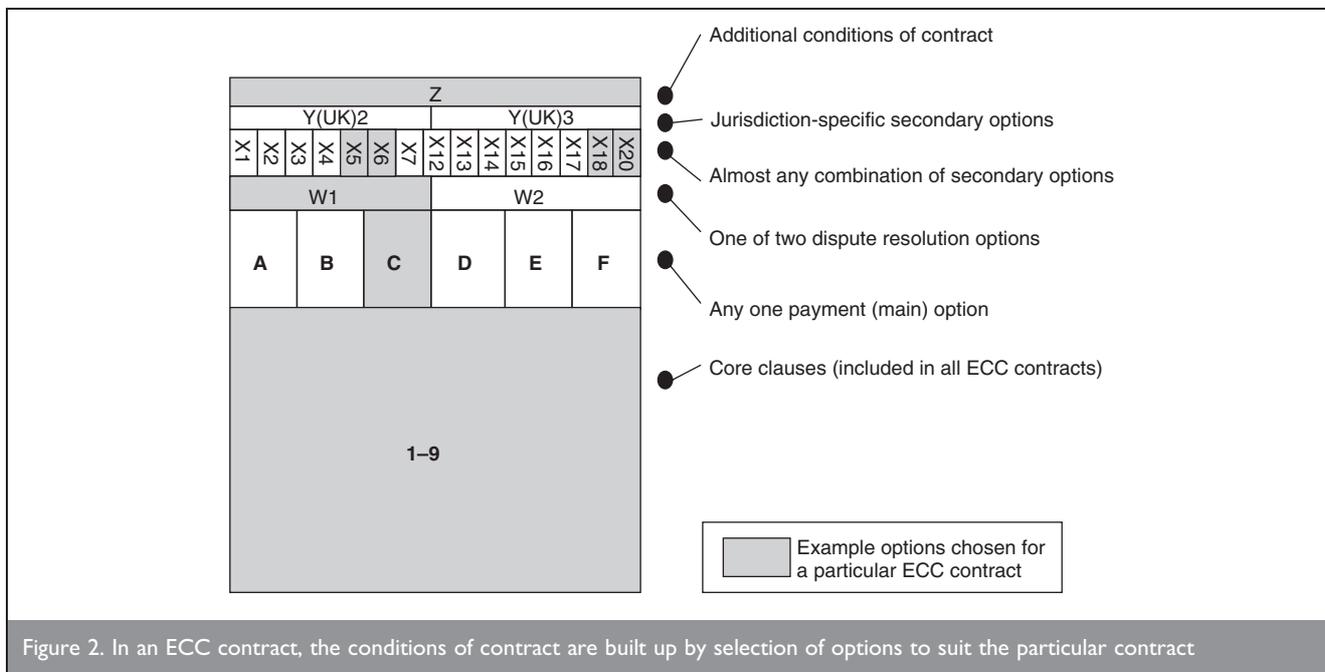


Figure 2. In an ECC contract, the conditions of contract are built up by selection of options to suit the particular contract

- (b) Some of the secondary options allow the client to choose to retain specific risks.
- (c) The additional conditions of contract allow the client
 - (i) to retain specific risks that may impact on the project by introducing additional compensation events and/or
 - (ii) to pass more risk to the contractor by deleting or amending those compensation events in the standard words of the ECC.

More details of these options are explained in the following sections.

Full details of all the options are provided in the NEC Guidance Notes.⁵

2.2. Estimating, pricing and efficiency risks – the choice of the main option

The ECC enables the parties to articulate how specific risks inherent in carrying out the works are allocated between the parties to the contract. However, irrespective of how those specific risks are allocated there is a fundamental level of risk allocation inherent in how the contractor will be paid. The choice of how to pay the contractor effectively determines how the risks in estimating, pricing and forecasting the contractor's efficiency are allocated.

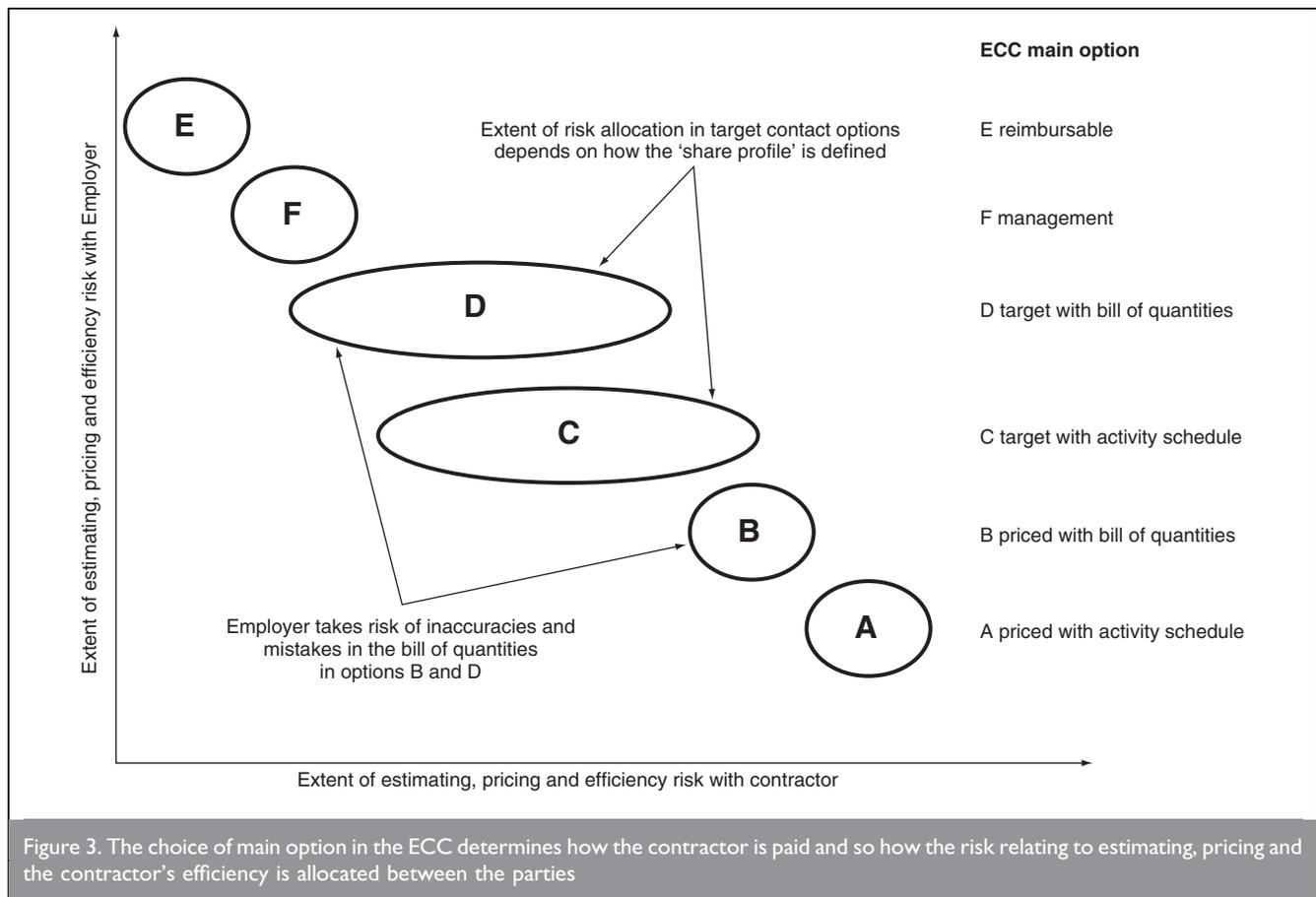
The ECC's flexibility allows and requires the client to select a payment mechanism appropriate to how it wishes to share the risk in estimating, pricing and the efficiency of the contractor. This part of risk allocation is determined by the choice of 'main option' within the ECC. The following list identifies the options available to the client.

- (a) Pass the whole estimating, pricing and efficiency risk to the contractor by choosing main option A (priced contract with activity schedule) – a 'lump sum' contract.
- (b) Pass the pricing and efficiency risk to the contractor but retain as client the risk of the correctness of a bill of quantities by choosing main option B (priced contract with bill of quantities).

- (c) Retain the majority of estimating, pricing and efficiency risk and simply pay for the contractor's resources to help achieve the client's requirements by choosing main option E (cost reimbursable contract). (In the cost-based options (C, D, E and F), the bidder bids fee percentages that are applied to its 'defined cost' and so has to cover for profit, any element of its real cost not included in the defined cost and the components of the defined 'disallowed cost'. Even in the 'cost reimbursable option E', the bidder has to take the risk that its tendered fee percentages are not sufficient to cover these costs.)
- (d) Share the estimating, pricing and efficiency risk by choosing a target contract – main option C (target contract with activity schedule) or possibly option D (target contract with bill of quantities) – in which the client retains the risk of the correctness of a bill of quantities. If the client chooses a target contract, it will also have to set appropriate 'share percentages' to define how to share the 'pain' of the contractor exceeding the 'target' or the 'gain' of the contractor making savings compared with the target. These share percentages are critical. The nearer the share percentages are to 0%, the closer (financially) the contract is to reimbursable (option E); the nearer the share percentages are to 100%, the closer (financially) the contract is to a lump sum contract (option A). (More detail on target contracts and share percentages is included in Broome.⁶)
- (e) Use option F, management contracting, where the management contractor is paid the tendered prices of the (normally small amount of) work it will carry out directly and the costs of its subcontractors: the client might enforce or accept the choice of options A, B, C, D or E for various (NEC) subcontracts.

Options A to E are also available in the Engineering and Construction Subcontract, allowing a main contractor to pass on the estimating, pricing and efficiency risk as appropriate to any subcontractors.

For a given level of definition of the works that are required, using option A gives the client the most price certainty.



However, this certainty comes at a premium as the bidder will include in its price for all of the estimating, pricing and efficiency risks. The use of option B in some circumstances may be appropriate when the employer is responsible for the design. Option E may be appropriate and sometimes necessary for emergency works, an ill-defined scope or research and development work. Options E and F and the target options (C and D) with 'open book' accounting encourage openness and collaboration but require administrative effort to review and reimburse the contractor's costs.

The target options, C and D, are radically different from more traditional priced contracts. Indeed, one specific reason for the early popularity of the ECC was that it was thought to be the first standard form to provide for a target contract. Under the priced options A and B, for the work as defined at the time of contract award, the employer simply pays the fixed amounts in an activity schedule (option A) or the fixed rates in the bill of quantities (option B). The employer thus has no direct commercial interest in the real costs of the contractor, or indeed in how the contractor manages the project-specific risks not retained by the client. In contrast, selection of a target option commercially incentivises the employer to collaborate with the contractor to help reduce its costs and manage risk. The fact that the employer pays the contractor something close to its real costs of carrying out the work and shares the 'pain' and 'gain' compared with the final target acts to change the way that the employer and the contractor work together. The cost impact of any specific risks that are not with the client, although referred to as 'Contractor's risks' in

the contract, are effectively shared between employer and contractor thanks to the share mechanism: hence the commercial incentive is for the employer to assist the contractor in managing those risks.

Aside from the fundamentally different risk allocation between the main options, there are a number of advantages and disadvantages associated with the choice of the main option to be considered depending on, for example, the level of design carried out prior to entering a contract and the amount of the remaining design to be carried out by the contractor. These are not considered in full here and the reader is referred to the ECC guidance notes⁵ for details.

This fundamental choice of main option in the ECC determines the overall level of estimating, pricing and efficiency risk for 'providing the works in accordance with the Works Information' as defined at the date that the contract comes into existence and taking all the specific risks carried by the contractor under the contract. (Note that 'Works Information' is the document within an ECC contract that describes and specifies the works (what is left when the contractor has finished) and sets out any constraints on how the contractor provides the works. It may include specifications and/or drawings.) This choice of main option is illustrated schematically in Figure 3.

2.3. Allocation and limitation of specific risks by choice of ECC secondary options

Certain specific risks can be allocated directly by the inclusion or omission of certain of the ECC's 'secondary options'. In

designing its contract to reflect its desired risk allocation (and certain other requirements) the client must choose the secondary options that it wishes to be included. For example, the client may include the following.

- (a) Option X1 (price adjustment for inflation) if it wishes to provide any protection for the contractor from inflation.
- (b) Option X2 (changes in the law) if it wishes the contractor to be protected from the risk of changes in the law. (This works by the simple addition of an extra compensation event (see below).)
- (c) Option X15 (limitation of the contractor's liability for its design to reasonable skill and care) if it wishes to reduce the contractor's liability for defects due to its design to the level of applying 'reasonable skill and care'. (In the UK, the default level of liability for a product provided by a contractor is one of 'fitness for purpose'. In such circumstances, there is no defence of having applied the 'reasonable skill and care' to be expected of a competent designer. Often consultants (who a contractor might like to use to carry out its design obligations) can not obtain professional indemnity insurance for such 'fitness for purpose liability' and an employer should consider the effects of not selecting option X15.)
- (d) Option X18 (limitation of liability) if it wishes to set maximum amounts of liability for any of a range of events and/or a specific end to the period within which it can notify a matter to the contractor.

The market practice for using or not using these options depends on the sector and on the state of the market. The author recommends the use of option X18 even if some or all of the 'limits' are stated (in the contract data) as 'unlimited'. In this way the client is very clear on the levels of liability it wants from its contract and, if there is some negotiation on limits prior to award of contract, there is a clear place in the contract for the results of that negotiation.

2.4. Allocation of the risk of occurrence of other specific events

2.4.1. *General.* As far as the contract is concerned, any particular risk has to be either 'with the client' or 'with the contractor' – that is, a compensation event or not a compensation event. As with almost all contracts, the ECC requires the risks retained by the client to be stated explicitly; all other risks are with the contractor.

The clear list of compensation events and the fact that all are treated in the same way is a real strength of NEC contracts. If the client wants to retain a particular risk – so that the tenderer does not have to include for it in its price – the client has simply to make sure that the risk is listed as a 'compensation event' under the contract. Compensation events are the *only* events that allow the contractor even the possibility of an increase in the 'prices' or a delay to the contractually required 'completion date'. If and when a compensation event happens, the ECC sets out the rules on how they are to be dealt with. It requires the parties to consider and agree on the effect (if any) of the event on both the time and the cost of getting the job done. The process by which the effect is assessed is the same for all compensation events.

Clause 60.1 in the 'core clauses' of the ECC sets out the list of compensation events that forms a starting-point for the risk

allocation for specific events in the contract. It was developed by the drafters of the contract to reflect good practice and be appropriate as a starting-point for a 'typical' project. The list may be supplemented because of the choice of main option. For example, choosing option B or D introduces compensation events relating to the bill of quantities which reflect the fact that the employer is taking the risk of the correctness of the bill of quantities. Choosing certain secondary options (as discussed above) also adds compensation events. The client should ensure that the compensation events in the contract reflect the specific risk allocation required for the contract. This might mean adding additional compensation events using the Z clauses, although compensation events should not be deleted from the list in the ECC. Any amendments must be done before the issue of bidding documents to bidders. The list might be further modified prior to award of contract to reflect any changes in risk allocation agreed prior to entering into a contract.

It is important to note that, in the case of a target contract (option C or D under ECC), the overall cost (but not programme) effects of events 'at the Contractor's risk' are effectively shared with the employer – because of the pain/gain mechanism. As noted above, this feature of the target cost contracts gives the employer a direct commercial incentive to help the contractor manage the contractor's risks. To emphasise this key difference from price-based contracts and encourage the collaboration that the adoption of target contracts should incentivise, the author has found it useful in project teams to talk of 'project' risks rather than contractor's risks even though the contract has to refer to them as contractor's risks.

The following sections set out how the ECC deals with the allocation of some common and important specific risks.

2.4.2. *Changes to what the client wanted – changes to the 'Works Information'.* The contractor's main obligation is to 'Provide the Works in accordance with the Works Information' (clause 20.1). Hence a vital part of any ECC contract is this 'Works Information'. This is the part of the document containing (clause 12.(19)) 'information which

- (a) specifies and describe the *works*, or
- (b) states any constraints on how the *Contractor* Provides the *Works*'.

The level of detail in the works information is for the client to decide. This can range from high-level performance requirements (typical if the contractor is required to carry out design) to detailed specifications and drawings. It may be appropriate for the level of detail to be different for different parts of the *works*.

The project manager (who acts for the employer) can change the works information by issuing an instruction to the contractor (clause 14.3). Unsurprisingly, the first event set out as a compensation event in clause 60.1(1) is that of the works information being changed – known as a 'variation' in many other contracts. The very real risk for a client is that its requirements are not clearly stated in the works information at the time of award of contract and that the management of the contract is plagued by numerous instructions to change the

Works Information and the compensation events that rightly follow.

2.4.3. Design risk

(a) *Who is responsible for what.* The ECC in clause 21.1 includes the simple statement 'The Contractor designs the parts of the works which the Works Information states he is to design'. This simple statement means that the ECC can be a contract for employer-designed works or contractor-designed works or for any combination of the two. It is up to the employer to include a clear statement in the works information. If the works information is silent on this point then the default is that the contractor does not design any part of the works. Then the contractor can expect the employer to design the whole of the works.

As stated above, the contractor has a simple obligation to provide the works in accordance with the works information. One would 'expect' in a contract that the contractor should take the risk that its designs actually do allow it to meet the requirements of the (employer's) works information.

In the case of any design by the contractor that is required to be submitted after award of contract, the project manager has an obligation to accept the design or not to accept it (clause 21.2). However, any such acceptance should not and does not change the contractor's responsibility to provide the works or its liability for its design (clause 14.1).

The client often requires that a certain amount of design is carried out by the contractor prior to the award of contract. (This might be submitted as part of a tender, or developed during negotiation.) If this is the case, the client also has to decide if it wants the contractor to be required to use the design that it has carried out up to that stage. If so, that 'design' has to be included somewhere in the contract.

Most model forms of contract for design and build by the contractor include terms and parts of the documents such as 'employer's requirements' and 'contractor's proposals'. Any design by the contractor prior to the award of contract is then included in the contract as part of the 'contractor's proposals'. The ECC does not use these terms: the obligation is to provide the works only in accordance with the works information. In the ECC, the client therefore needs to set out its requirements in the works information. If the client wishes to include in the contract any of the design carried out by the contractor prior to the award of contract, there is a very specific 'place' for such information: the 'Works Information provided by the Contractor for his design'. This 'subset' of the works information is pointed to from the contract data part two – the part of the contract data completed by the contractor (normally) as part of its tender. The term 'Works Information provided by the Contractor for his design' is referred to in only one line in the ECC – Clause 60.1(1). The effect of this clause is that if the contractor requests a change to 'his' part of the works information so as to meet a requirement elsewhere in the works information

- (a) the project manager (on behalf of the employer) has the option to accept his proposed change or not to do so, and
- (b) the resulting change to the works information will not be a compensation event.

This establishes a clear hierarchy: in the event of any conflict between them, the works information (that provided by the employer) takes precedence over the 'Works Information provided by the Contractor for his design'. Because of this, the risk of the adequacy of any pre-contract design by the contractor and the possible need for design development for elements to be designed by the contractor is clearly where it should be: with the contractor.

This distinction is important. The author has been involved in many projects in which the client and contractor have worked together prior to the award of a construction contract to develop and articulate the requirements of the client and to develop the design to meet those requirements. The price (often a target price) has to include an allowance for any remaining detailed design and construction. This process is becoming increasingly common (in the UK and, gradually, internationally) in what has become called 'early contractor involvement' or 'two-stage tendering'. The project team should consider the question of who takes the risk that the design developed at this stage may need to be corrected or changed after award of the construction contract to meet the requirements of the client as articulated in the works information. In the ECC, the allocation of this risk will be determined by exactly where in the contract the information is located.

- (a) If the information is in the 'Works Information provided by the Contractor for his design', the risk of needing to change this information is with the contractor.
- (b) If the information is in the other works information, the risk is with the employer.

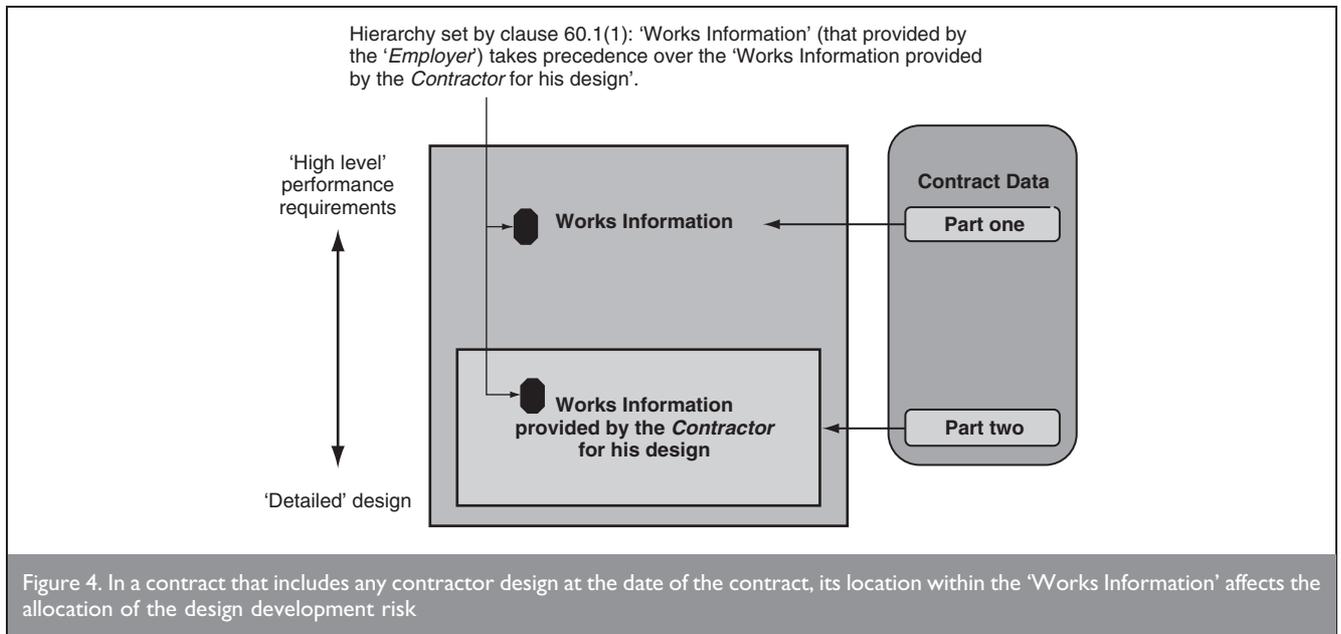
The parties must therefore make sure that the location of information in the Works Information reflects the risk allocation that they intend.

This is illustrated in Figure 4.

(b) *Type of design liability.* If the contractor is to design parts of the works, it is responsible for achieving whatever required performance is stated in the works information. Under many jurisdictions, the contractor will have a strict 'fitness for purpose' liability for the design of elements which it designs and builds. If the client (or most likely the contractor) wishes to limit the contractor's liability to 'reasonable skill and care then secondary option X15 should be included in the contract, as discussed above in Section 2.3.

(c) *Limit of design liability.* If the client wants to limit the financial level of the contractor's liability for defects due to design then secondary option X18 should be included in the contract, also as discussed above in Section 2.3.

2.4.4. *Weather risk.* In terms of precision, the ECC moves a long way from the 'exceptionally adverse weather' provisions of many less modern contracts. Instead, in Clause 60.1(13) the ECC sets out as compensation events certain well-defined 'weather measurements'. If and only if a recorded specific weather measurement is shown, by comparison with stated weather data, 'to occur on average less frequently than once in ten years', then the contractor is entitled to a compensation event. The risk of any weather measurements less than the 1-in-10-year event and the risk of any types of weather about which the ECC is silent – such



as, for example, wind speed – remains with the contractor. It is up to the client at tender stage to consider if the 'default' weather risk allocation is appropriate for the project. If not, modifications must be made, normally by adding to or changing the weather measurements referred to from clause 60.1(13).

2.4.5. Physical conditions risk. For physical conditions it is less easy to be precise. The default risk allocation in the ECC is set in clause 60.1(12). (It has been suggested that the arbitrary decision to have this particular compensation event referenced with a '12' was for the benefit of a generation of UK civil engineers used to 'clause 12 claims' relating to ground conditions under the ICE (Institution of Civil Engineers) Conditions of Contract!)

Three tests have to be passed for physical conditions to be a compensation event. They have to be

- (a) within the site
- (b) not weather events
- (c) such that 'an experienced contractor would have judged at the contract date (when the contract came into effect) to have such a small chance of occurring that it would have been unreasonable for him to have allowed for them'.

Clause 60.2 requires the contractor to take into account the 'Site Information' (among other things) in judging the physical conditions. As is the case with any contract where physical conditions are important, the client is usually well advised to invest in quality factual information about, for example, ground conditions and existing services (common problems in works below ground level) to allow all parties to assess the risks associated with physical conditions. The place for this information in an ECC contract is clearly in the part of the contract called 'Site Information'.

This risk allocation may be appropriate for your project. However, if for example, excavation is a significant part of the project, it may be more appropriate to include instead some more specific compensation events relating to the occurrence of

specific values of stated parameters. This is the case on one major metro project with which the author has been involved. Here additional compensation events are related to the values of certain parameters set out in a 'geotechnical baseline report' (GBR).⁷ The GBR will be included within the site information and additional compensation events will be defined in the additional conditions of contract by reference to the values of key parameters in the GBR.

2.5. Compensation events and employer's risks

In Section 2.1 and Figure 1, this paper has explained how anything intended to be at the client's risk should be a compensation event under the contract. The term 'client' instead of employer was intentionally used to refer to the buyer prior to award of contract. The reason for this should become clear in this section.

One of the standard compensation events (clause 60.1(14)) is the simple statement, 'an event which is an Employer's risk stated in this contract'. The contract sets out these particular 'Employer's risks' in clause 80.1. The employer's risks are set out separately from the other clause 60.1 compensation events for good reason. The distinction allows a statement to be made in the contract about the risks against which the contractor is required to obtain insurance: those events that are not employer's risks. The employer's risks include things such as war, revolution and wear and tear after take-over.

If an employer's risk (clause 80.1) occurs, the event is a compensation event and the contractor will be compensated for the effect of the event on both time and on the defined cost of providing the works as is the case for any compensation event. However, additionally for 'Employer's risks', because of clause 83.1, the employer indemnifies the contractor against the effect of that event.

As an example, one might add a compensation event for a particular level of flooding on a river affecting the site. If the

flood happens, the compensation event would protect the contractor against the time and cost effects of the event of providing the works. If the flood event was included instead as an 'additional *Employer's risk*' the contractor would also be indemnified by the employer against the cost of the damage to third parties done as a result of the event – for example, by the contractor's temporary equipment as it was washed down the river.

The contract is clear also that the contractor is required to provide insurance to 'cover for events which are at the *Contractor's risk*' (Clause 84.2). As might be expected, risks which are not employer's risks are carried by the contractor (clause 81.1). So, for events which the client decides in the tender documents are '*Employer's risks*', it is up to the employer to decide whether or not to insure against them himself.

Despite these differences, in the author's experience of training on ECC, even some regular users of the contract do not fully understand the distinction between employer's risks under the contract and other compensation events. For example, if a project risk register is developed (separate from and in advance of any contract or even tender documents), one often sees terms such as 'ownership' of risk being used to describe the preferred risk allocation between the contractor and the client. If the risk is to be 'owned' by the client, one has to decide if it should be an employer's risk under the contract (and so a compensation event) or whether it should be 'just' a compensation event.

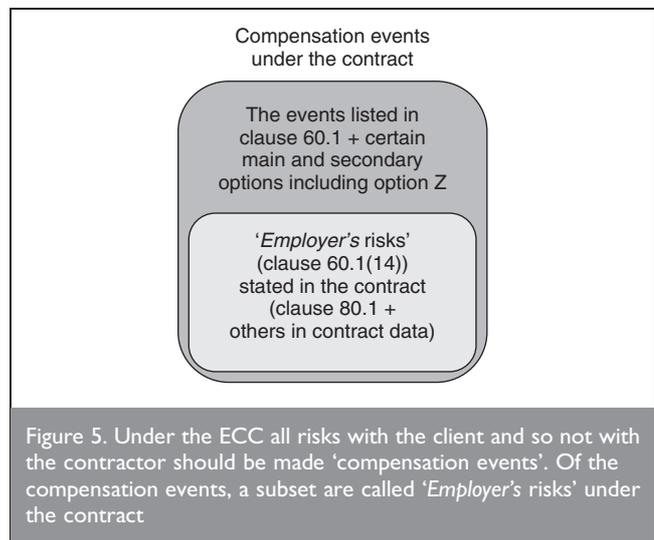
If changing the default list of compensation events and employer's risks in the contract, one has to be careful. Oddly, in the opinion of the author, the very minor June 2006 amendments for the ECC removed the option of simply adding 'additional compensation events' in the contract data. Instead, one has to use the additional conditions of contract (option Z) to modify the list of events in clause 60.1. However, the contract data, part one still includes the option to add 'additional *Employer's risks*'. Document compilers should note carefully the difference between employer's risks and compensation events and act – or at least draft – accordingly. Those who do not understand the distinction may, as they complete the contract data, add events as employer's risks rather than as compensation events when prompted for an entry for 'additional *Employer's risks*' in the contract data. This is often without understanding the consequences of doing so as explained above.

The distinction between employer's risks and other compensation events and where they are found in an ECC contract is illustrated in Figure 5.

3. RISK MANAGEMENT

3.1. Risk in the programme

The programme is critical to the management of any project and so is central to the ECC. The ECC is unusual among standard forms in specifically requiring all programmes submitted by the contractor to include 'provisions for time risk allowances' (Clause 31.2). In effect the contractor has to show how the durations he shows for activities allow for the time impact of risks that are with the contractor.



3.2. Risk registers and early warning

It is good practice to consider risk management from the start of a project. If a formal risk management process is in place, the client may operate some form of project risk log or risk register well before any construction contracts are let. This often sensibly shows the risks intended to be 'retained by the client' in the contract(s) used for the project.

This risk log should inform the development of specific contracts for the project. The client should consider the need to modify the list of compensation events in the 'standard' starting-point in the ECC to reflect the risk allocation it desires as described in Section 1 of this paper.

So what is the 'Risk Register' in the ECC? How does it relate to any other risk registers used on the project? Feedback from various ECC training courses and the NEC Users' Group helpline suggests this can cause confusion. The following paragraphs are intended to explain.

Early warning (clause 16) is the critical process for notifying and dealing with risk under the ECC. The contractor and the project manager are required to give early warning by notifying the other as soon as either becomes aware of any matter which might affect the total of the prices, delay completion or meeting a key date or impair the performance of the works. The contractor and the project manager are required to use the procedure (they 'shall act as stated in the Contract', clause 10.1) and there are strong sanctions on the contractor for not notifying early warning. In particular, under clause 63.5, if the contractor did not give early warning 'which an experienced contractor could have given', any subsequent compensation event is assessed as if he has given that early warning – that is, if the project manager had been given the warning and the time to deal with the event in another way. Additionally, in the case of target cost and reimbursable contracts (options C, D, E and F), the project manager may disallow costs that were incurred because the contractor did not give early warning (ECC clause 11.2(25)).

In the former edition of the contract (ECC2),⁸ notified early warnings were discussed at 'early warning meetings' and were

Description of the risk	Probability	Time impact	Cost impact	'Owner'	Employer's risk under the contract (Y or N)	Other compensation event under the contract (Y or N)	Cost risk allowance in total of the Prices	Cost risk allowance for events outside the Prices: managed by the client as a contingency	Predicted risk expiry date	Actual risk expiry date	Actions which are to be taken to avoid or reduce the risk
(3)							(1)	(2)			(3)

(1) Risks 'below the line' in Figure 1: a specific allowance by the tenderer may or may not have been made apparent during the tender process. Whether or not it did has no contractual relevance after award of contract.
(2) Risks 'above the line' in Figure 1.
(3) Columns required to be included in the (ECC) 'Risk Register' (clause 11.2(14)).

Table 1. Example of columns in a project risk register: the ECC 'Risk Register' might be managed as part of this

logically recorded in some sort of register of early warnings. In ECC3, notified early warnings are discussed at 'risk reduction meetings' and required to be recorded by the project manager in the 'Risk Register'. Prior to award of contract, the parties, in the contract data, parts one and two, are prompted to include 'items to be included in the Risk Register'.

The definition of 'Risk Register' (clause 11.2(14)) is

The Risk Register is a register of risks which are listed in the Contract Data and the risks which the *Project Manager* or the *Contractor* has notified as an early warning matter. It includes a description of the risk and a description of the actions which are to be taken to avoid or reduce the risk.

The statement, 'The following matters will be included in the Risk Register', appears in

- (a) contract data part one – data provided by the employer
- (b) contract data part two – data provided by the contractor.

Hence, while completing the contract data, prior to the award of contract, both client and potential contractor can, by including events in these entries, ensure that certain risks are on the risk register and so talked about after award of contract. However, there is no risk register included as part of the contract.

The risk register is not for risk allocation but is a document to help promote risk management – after award of contract. It comes into existence at the first risk reduction meeting.

The entries in the contract data under 'The following matters will be included in the Risk Register' should not be allowed to hint at which party carries a particular risk after award of contract. The risk allocation intended (perhaps stated in the non-contractual pre-contract risk register, if the project has one) must be put in place clearly via changes to the ECC's starting-point for compensation events and employer's risks as described above.

The rigorous structure of the ECC means that a statement relating to risk allocation in the contract data entry, namely 'The following matters will be included in the Risk Register', should have no contractual effect unless explicitly pointed to as

a compensation event. It must though, be better for both parties to follow the rules and set out the risk allocation as the contract intends and to avoid loose wording in the risk register. For this reason, the client, in its instructions to tenderers, might suggest that tenderers avoid attempting to change risk allocation through the contract data part two entry: 'matters to be included in the Risk Register'. Then, during tender assessment, the client should pay close attention to the tenderers' words. Any attempts by a tenderer to shift risk to the client here should be treated by the client like any other qualification to the tender.

Best practice in project risk management would see the team managing a project risk register throughout the project until the end of the 'funnel' in Figure 1. The person responsible for managing that project risk register may also be the person acting as the ECC project manager, who is required by the ECC to maintain the risk register.

The content and use of project risk registers varies hugely depending on the sophistication of the client and the complexity of the project. However, a look at typical fields in a risk register suggests that a small subset of the fields in a project risk register would serve the purposes of the risk register required under the contract. By careful labelling of the relevant fields in a project risk register, the ECC project manager can do what he is required under the contract to do to the risk register, without duplication (Table 1).

In the author's experience, effective ECC project manager's review and update the risk register 'on screen', during discussion with the contractor at a regular risk reduction meeting.

In discussing and updating the risk register following early warnings as required by clause 16, the project manager should be aware that, under the contract, he or she has no power to alter the risk allocation under the contract with regard to the contractor providing the works as set out in the works information. The project manager and only the project manager can change the works information and an update to the risk register is not a change to the works information. If decisions made at a risk reduction meeting do require a change to the works information, then it is for the project manager to instruct such a change separately.

3.3. Allocating risk in compensation event quotations

A key feature of the ECC is its detailed and flexible procedures encouraging and requiring the parties to manage and agree the effects of compensations events. Those procedures are exactly the same for all compensation events. The process requires the parties to forecast and agree the effect, if any, of each compensation event on the contractor's costs and its programme. These are required to be agreed within tight timescales when or, in the case of proposed changes, before, they occur. This is the essence of good project management and allows both parties to maintain a better ongoing forecast of the cost and completion date for their project than is the case with many other forms of contract. If managed properly, the process also leads to less disputes and earlier settlement of the final account. The ECC is sometimes criticised for the 'administrative burden' required to maintain this degree of control. This is particularly the case if there are a lot of compensation events, which are often due primarily to employer changes. While it is true that the process requires effort, training and effective systems from both project manager and contractor, a client considering the use of the ECC must decide if it wants to invest to achieve the benefits that the ECC can deliver compared with other forms.

The assessment of a compensation event should include a risk allowance for cost and time for matters which have a significant chance of occurring and are at the contractor's risk under the contract (clause 63.6). The contractor is required therefore to sensibly consider and allow for all such risks in its assessment of the forecast effects of the compensation event on time and cost. However, there is no need to allow in the assessment for risks that would in themselves be compensation events; if they happen then a further compensation event will be notified.

Importantly, assessments are not revisited even if the forecasts used to develop them are later proved wrong (clause 65.2). Sometimes the risk allowance that the contractor considers appropriate may lead to a quotation considered to be excessive by the project manager. The project manager may challenge the contractor's assessment of the risk allowance or, in such instances, the ECC gives the project manager the power and tools to manage this aspect of risk differently.

The project manager may decide that the effects of a compensation event are too uncertain to be forecast reasonably or may simply determine that it is better for the employer to retain a particular risk in a quotation. If so, under clause 61.6, the project manager may state specific 'assumptions' to be used in the contractor's 'forecast' of the effects of the compensation event in its quotation. If any of those stated assumptions are later found to have been wrong, the notified correction of the assumption is a further compensation event (clause 60.1(17)). The difference in the use of the words 'forecast' and 'assumption' should be noted. On the other hand, if for a particular compensation event notified at a particular time, it is in the employer's interest to obtain more time and cost certainty, the project manager can 'buy' that certainty on behalf of the employer by requiring a quotation with few or no stated assumptions. Rightly, only the project manager may state assumptions to be used in a

quotation, but it is good practice to discuss appropriate assumptions with the contractor prior to asking for a quotation.

In effect, the use of 'Project Manager's assumptions' to effect risk allocation in quotations for compensation events is very similar to the client's use of the list of compensation events to effect risk allocation in the contract as a whole prior to award of contract.

Strictly, the risk of an assumption needing to be corrected later is a client's risk. It might therefore appear on the project risk register as a risk held back by the employer.

4. CONCLUSION

The fundamental strengths of the NEC contracts and the intended guiding principles in their drafting are clarity, flexibility and being a stimulus to good management.

In the specific context of risk, NEC contracts allow a client to implement any procurement and contract strategy and to allocate risk in contracts both clearly and flexibly to suit its objectives. The clarity of risk allocation is important in the avoidance of disputes. This paper has shown how this is achieved by the flexibility of the main and secondary options from which a particular contract is built up and the simplicity and generality of the concept of compensation events as the only events that are at the client's risk. In doing so, the paper has identified the differences and similarities between those risks explicitly stated as employer's risks under the contract and other 'compensation events'.

The ECC's clear procedures also support effective and open risk management after contract award, which is an important feature in helping to avoid disputes. The early warning process and the risk register are simple but effective risk management tools to encourage and require the ongoing assessment and management of risk throughout the period of the contract. This paper has explained the use of the contract's risk register as a post-contract risk management tool and the use of clearly stated assumptions in quotations for compensation events to allocate and manage the risks in those quotations.

Proper and considered use of the NEC contracts allows a client and its contractor and subcontractors to allocate and manage risks appropriately in the best interests of the contract, the project and all the parties involved and so to achieve success and avoid disputes.

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