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NEC for DBFO – taking best practice procurement into PPPs

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The NEC – formerly the New Engineering Contract – is a family of modern contracts drafted for simplicity and flexibility and to be a stimulus to good management (www.neccontract.com). There are contracts for work supply, physical services and professional services. They are used extensively in the UK and South Africa, to an extent in New Zealand and are being trialled by the Hong Kong Government. Some international financing institutions are now considering the use of NEC rather than the Federation International des Ingenieurs-Conseils contracts that they have traditionally used. This article considers NEC for design, build and operate contracts and then reviews the potential to use NEC as the basis for the design, build, finance and operate contracts that are at the centre of the project finance deals used worldwide in public–private partnership projects.

1. Introduction

The NEC – formerly the New Engineering Contract – is a family of modern contracts drafted for simplicity and flexibility and to be a stimulus to good management (www.neccontract.com). There are contracts for work supply, physical services and professional services. They are used extensively in the UK and South Africa, to an extent in New Zealand and are being trialled by the Hong Kong Government. Some international financing institutions are now considering the use of NEC rather than the Federation International des Ingenieurs-Conseils (Fidic) contracts that they have traditionally used. For example, the Asian Development Bank (ADB) has commissioned NEC to develop an NEC document for design, build and operate (DBO) contracts.

This paper considers NEC for DBO contracts and then reviews the potential to use NEC as the basis for the design, build, finance and operate (DBFO) contracts that are at the centre of the project finance deals used worldwide in public–private partnership (PPP) projects.

2. NEC for DBO contracts

In October 2013, the authors of this paper published a paper showing how, in principle, NEC contracts could be used for a DBO contract (Patterson and Trebes, 2013). The paper suggests that the design and build (D&B) phase could be managed under the terms of the NEC Engineering and Construction Contract (ECC) (NEC, 2013a) and the operation phase managed under the

NEC Term Service Contract (TSC) (NEC, 2013e). Yes, some additional clauses (Z-clauses) would be required to 'link' the two phases together, but that paper argues that, for various reasons, starting with NEC would at least be a sensible option to be considered for DBO. The basic structure of the documents in a DBO contract using the NEC is set out in Figure 1. (Note that the standard conditions of contract and any necessary changes would be incorporated by reference from what the NEC calls the 'Contract Data part one' in each of the ECC and TSC.)

In essence, the ECC is used for the D&B phase and the TSC is used for the provision of the service – the operation and maintenance (O&M) phase. The service requirements for the O&M phase are set out in the service information of the TSC. The works information in the ECC will require facilities that can meet those service requirements and include any additional requirements and constraints on the facilities to be designed and constructed. For example, in a water project, the TSC service information would be limited to the quality and quantity of the water required; the ECC works information might include some further design constraints.

Since that paper was published, one of the authors has been part of an NEC team developing the idea into a draft set of bidding documents for a DBO contract with the NEC as requested by an international client. The additional conditions of the contract for DBO amount to fewer than two pages. The only currently



Figure 1. DBO based on standard NEC contracts

published 'standard' contract for DBO known to the authors is the Fidic 'Gold Book' (Fidic, 2008). Fidic contracts for employerdesigned works and contractor-designed works have a long heritage and are widely used internationally but, it is considered, do not meet the NEC's standards for clarity, flexibility or stimulating good management. (For a comparison of NEC and Fidic, see Heaphy (2013).)

A deal where the asset is constructed using project finance is typically DBFO – design, build, finance and operate (DBFO is one form of PPP). It has the potential advantages of effective risk transfer to the party best equipped to deal with risk, focusing on whole-life cost and bringing additional rigour to the project and the contract imposed by those financing the deal. If NEC could be a good starting point for DBO, can it deal with DBFO? This article tries to answer this question.

3. The basics of DBFO

The basic structure of a DBFO deal and the parties involved are illustrated in Figure 2. The entity in contract with the employer is often known as the project company rather than the 'contractor'. That project company is often a venture of more than one company and often set up specifically for the project. It is sometimes known as a 'special purpose vehicle' (SPV). In essence, the main difference between DBFO and DBO is that in DBFO, the employer pays the project company for the service and sometimes the availability of the asset but *not* for constructing the asset. As a result, the project company typically has to secure a lender (or lenders) to loan sufficient money for the project company to finance the construction of the asset.

The charge for the service therefore has to cover the marginal cost of providing the service and the cost to the project company of the financing. The loan is then paid off by the project company only when the project company is being paid by the employer for providing the service, or, in the case of a 'concession' by the end users in the form of a toll or fee. The lenders then need a 'direct agreement', which gives the lenders 'step-in rights' in the event of failure of the project company to perform as required by the project agreement.

The web of contracts is complex. Much time is often spent negotiating the passing through of project-specific risks from the employer to the project company and on to the engineering, procurement and construction (EPC) and O&M contractors. In some cases, the project is not as well developed as it should have been prior to procurement. That can lead to wasted time as bidders challenge the risk allocation in the bidding documents. Typically, even after the competitive phase, when a 'preferred bidder' is appointed, there is extensive negotiation on the finer points of risk allocation.

In mature markets for PPP where there is a pipeline of similar projects (e.g. UK, France, Canada, Australia, South Africa, the Netherlands, Germany, Belgium, Spain and Turkey), something close to a 'standard form' of project agreement and accompanying schedules has been developed. In the UK, for example, the government set rules on the standardisation of PPP contracts known as 'SoPC' including principles of risk allocation and some drafting, which was the culmination of some 10 years of experience (HM Treasury, 2007). This was updated after



Figure 2. The basic structure of a project finance (DBFO) deal

consultation to guidance on the rebranded 'PF2' contracts (HM Treasury, 2012). In Canada, a standard has been adopted, which is based on SoPC. However, where PPP is less developed, first the law itself often has to be developed to accommodate PPP and there is no such standard starting point for the project agreement.

In some sectors and countries, because of the absence of a standard form, the employer needs to have its 'project agreement' (the main contract) for such a deal drafted almost from scratch. If that is the case, the project agreement is typically developed by the employer's lawyers and challenged by other sets of lawyers representing each of the bidders and their prospective lenders. The starting point used is often the project agreement in the last deal done by (or available to) the employer's lawyers. The result then is that all parties spend large amounts of expensive time debating what should be relatively standard provisions for DBO. Instead, surely, the time would be better spent focusing on the risk allocation that is really unique to the project.

4. NEC for DBFO – why?

Why not base the project agreement on standard contracts that are specifically designed for clarity and flexibility and to stimulate good management and are gradually becoming accepted internationally: the NEC?

4.1 The NEC is very good at risk allocation

DBFO contracts, perhaps above all others, are about careful, clear risk allocation and often risk shedding to the project company. At the project agreement level, the client is often very keen to pass risk to the project company, mainly for a degree of certainty of payments and sometimes to put the project 'off balance sheet' for accounting purposes. The nature of the project company and its funders' desire for certainty means that the project company typically tries to pass almost all risks on to its subcontractors, the EPC contractor and the O&M contractor, whether or not this really achieves 'best value'.

The NEC is very clear and very flexible when it comes to risk allocation (Patterson, 2009b). It requires users to choose an option for payment, which allocates the 'estimating risk' and the 'efficiency risk'. In the case of DBFO, the option most likely to be used is 'option A', which is the priced (lump sum) contract. Then the user may select from a number of 'secondary options', some of which directly allocate risk, for example, the risk of inflation and the risk of changes in law. For specific events, anything that is not at the contractor's risk has to be a 'compensation event'. The standard NEC contracts include a good start at appropriate compensation events for a 'normal' contract. The process for dealing with the time and cost of all such compensation events is the same, clear and subject to sensible and very specific time constraints. For DBFO contracts, many standard construction risks, like physical conditions, are often placed with the contractor. The required risk allocation can be effected by a simple and very clear deletion of the relevant compensation event from the standard contract and in some cases the inclusion of additional compensation events. In the particular case of physical conditions, it may be appropriate for the employer or the project company to retain risk above certain stated levels of particular parameters. This can be achieved by

combining the NEC with a 'geotechnical baseline report' (GBR) (Patterson and Essex, 2010). (The use of a GBR is now required in the case of tunnelling projects to be able to secure insurance.) Using NEC would give the advantage of all parties starting with clear standard terms and mechanisms for all the standard things that need to be covered by a construction or service contract.

4.2 The NEC is an international contract

Importantly, the NEC is designed to be used internationally. It has been successfully used extensively in the UK and South Africa, where it is one of the standard contracts used by the respective governments. It is being increasingly used in New Zealand, and in Hong Kong, the government has extended its trial and made NEC the default contract for its construction contracts from 2015. It has been used for airports in India (NEC, 2015a) and has been chosen for one major project in the Netherlands (NEC, 2015b). Minor secondary options, stretching to no more than half a page, are provided to suit just two aspects of UK law and one of New Zealand law. Similar minimal changes are required in other jurisdictions. His Honour Humphrey Lloyd stated, 'In a nutshell, there are no real difficulties in using the NEC3 contract either inside or outside the UK. With a couple of exceptions, the core clauses of NEC3 do not contain any significant features that would make it unwise to use it abroad' (Lloyd, 2008; Patterson, 2009a).

4.3 The NEC publishes NEC subcontracts designed to fit with the main contracts

The NEC suite of contracts is also designed very much with subcontracting in mind.

- The NEC publishes the NEC Engineering and Construction Subcontract (ECS) (NEC, 2013b), which, almost word for word, matches the provisions of the ECC.
- There is also the much simpler Engineering and Construction Short Subcontract (NEC, 2013c).
- The TSC can be easily adapted to be used as a subcontract to a TSC main contract (see Appendix f of NEC (2013f)), as can the Term Service Short Contract (TSSC) (NEC, 2013g).

Hence using the NEC as a basis for a DBFO contract would make it much easier for the project company to develop the required subcontracts for the EPC and O&M contractors that follow good practice in procurement and contract management. If the EPC contractor or O&M contractor wants to subcontract the work further – as will almost always be the case – they, too, can use standard NEC contracts for design (NEC, 2013d), construction and/or services. This would make it easier (and also cheaper) for the project company, EPC contractor and O&M contractor to back down a bespoke PPP project agreement. This was the case for the Project Alpha water PPP in Northern Ireland. The project company's programme manager stated, 'We used a modified NEC contract because the partnering ethos is something we're all familiar with, and there is some quite sophisticated risk sharing in that contract' (Cole, 2007).

4.4 The NEC is specifically designed for management

The nature of DBFO contracts is such that the requirements are set at a performance level and not normally subject to much change. However, most bespoke contracts will have to include provisions for programme and change. Critically, as well as being flexible, the NEC contracts, including the ECC and the TSC, are specifically designed to encourage good management of a project and a service, respectively. This is thanks, among other things, to an emphasis on a detailed and regularly updated programme, a simple but critical process for the 'early warning' of events and their collaborative management and a clear time-bound process for managing compensation events.

The NEC standard terms are so process driven that one can purchase management software allowing the parties to manage their contract 'in the cloud'. That software could be modified to suit (well-drafted) changes required to the standard conditions. This is in stark contrast to the complexity of many bespoke PPP contracts.

It should be noted that while the NEC contracts are clear and flexible and stimulate good management, they do in turn *require* good management. The most common criticism of them is that they require significant 'administration'. This is the case, but the main 'burdens' are the requirements for a detailed and regularly updated programme and the timely management and agreement of compensation events. Each of these is critical for the proper 'good practice' management of the project agreement and, in turn, the subcontracts.

5. What makes DBFO really different from DBO and how might NEC deal with those issues?

A DBFO contract has, of course, to cover the D&B and the operation phases. From experience, the clauses relating to D&B and operation make up the vast majority of the words in a DBFO contract. A DBO contract can be put in place using the NEC contracts as described above. So what issues in the DBFO contract actually relate specifically to the 'F' word – finance?

A review of a number of recent contracts suggests these are limited to things such as

- an obligation to obtain financing
- conditions precedent to the agreement
- the full pass through of risk from the project company to its supply chain
- the payment mechanism
- the financial model (and a financial model auditor)
- refinancing
- assignability of the project company's contracts to lenders
- termination.

5.1 An obligation to obtain financing

The obligation for the project company (the contractor) to obtain and maintain financing could be a clear statement in the works

information, or, probably better, as a simple additional clause (a 'Z'-clause). A failure to maintain all important financing would need to be added as an additional reason for termination.

5.2 Conditions precedent to the agreement

A DBFO deal often requires several contracts to come into place before any one of them is 'effective'. Such a provision would need to be stated in a Z-clause, logically at the very start of part 1 of the conditions.

5.3 The full pass through of risk from the project company to its supply chain

Before lending to the project company, lenders typically want to see that the project company has properly passed through almost all risks to its supply chain, typically an EPC contractor and an O&M contractor (see Figure 2). If a bespoke contract is drafted for the project agreement, the project company, helped by its lawyers, has to draft bespoke EPC and O&M contracts - to be reviewed by any potential subcontractor and his lawyers. Those subcontracts are then also the subject of review by the lender's legal and technical advisers. If NEC contracts were used as the basis of the project agreement, the EPC and O&M subcontracts could be based on the ECC and the TSC, respectively, as discussed above. Importantly, in the NEC, the only way that the contractor can get additional time or money is through a compensation event. These are listed clearly in one place. For a specific risk to be passed to the subcontractor, the related compensation event can be deleted. A particular and often contentious issue is the level of liability that can be passed to the EPC and O&M contractors. NEC has a clear secondary option X18, which requires the limits (if any) on various types of liability to be clearly stated.

5.4 Payment mechanism

As noted in the paper on DBO (Patterson and Trebes, 2013), payment for the service under TSC would usually be developed specifically to match the service being provided and could be presented as the 'price list' recognised by the TSC. That price list can be structured to reflect the 'fixed' and 'variable' costs that are typically required to provide a service. ('Variable' costs are those that depend on the 'amount' of service being provided e.g. cubic metre of water in a water PPP or volume of traffic in a highways PPP. 'Fixed' costs are those that are independent of the 'amount' of service and typically include fixed staff costs, insurances and, critically, debt repayment.) Under the ECC conditions for the D&B phase of a DBO contract, the activities relating to D&B would be paid for in a standard ECC way, normally on completion of defined activities in an 'activity schedule' if the ECC's option A (priced contract with activity schedule) is used. The key difference between pure DBFO and DBO is that the project company is normally paid nothing by the employer until the service is provided. So the ECC for the D&B phase in a DBFO contract could be left almost unaltered - except that the activity schedule would total zero. However, it might be clearer to delete the entire ECC payment mechanism (all neatly in part 5 of the core conditions of the ECC). Some international

DBFOs need cash injection from the employer during the D&B phase to make the project 'bankable'. (This is sometimes known as 'viability gap funding'.) This is invariably paid on reaching certain milestones. Such milestones could easily be reflected in an ECC option A activity schedule to allow the viability gap payments to be made.

In DBFO contracts, as in DBO and indeed pure service contracts, a key part of the payment mechanism is often a set of pre-determined performance deductions for non-compliance with the requirements of the service. It may be noted that omission of a mechanism for such performance damages was criticised by some in Fidic's standard form for DBO, the Fidic 'Gold Book' (Fidic, 2008; Thomas, 2011). The mechanism for pre-determined performance damages is provided for in secondary option X17, performance damages, of the TSC contract that would form the basis of the operations phase of a DBO (see Figure 1) or DBFO contract.

5.5 Financial model

The lenders to a DBFO deal need a very detailed 'financial model' showing

- the timing of payments under the loan agreement
- the timing of payments back from the project company to the lenders
- the project company's revenues (normally only in the operations phase), based on the payment mechanism and forecast demand for the services
- the project company's costs for D&B and for operation and so the
- 'internal rate of return' (IRR) from the project.

In the case of changes to the services imposed by the employer or other events at the employer's risk, it is typical to use the financial model to generate the required changes in the prices for the services to compensate the project company for the agreed forecast changes in cost. It is normal to agree that changes to the prices should be such that the modified financial model shows the same IRR as that at the date of the award of the contract.

In the NEC model, this could be achieved by relatively simple and incisive modifications to clause 63.1 covering the financial effects of the NEC's 'compensation events'. The standard ECC values all compensation events at a 'defined cost' plus a tendered fee and requires an appropriate change to the 'prices' in the contract. In a DBFO contract, this would be modified to changes to the prices such that the IRR is maintained at its tendered value in the financial model.

5.6 Financial model auditor

The financial model is a critical document and is typically required to be subject to the audit of an independent 'financial model auditor' prior to award. The involvement of the auditor in relation to post-award changes to the financial model could easily be incorporated as a Z-clause.

5.7 Refinancing

Refinancing provisions typically take up a few pages of a DBFO contract. However, they are not intrinsically linked to other parts of the contract and could be introduced as almost stand-alone Z-clauses to the NEC contracts.

5.8 Assignability of the project company's contracts to lenders

Lenders will typically require that any of the project company's subcontracts can be assigned to the lenders in the event of the project company's default. This would require a simple Z-clause.

5.9 Termination

Much time in negotiating a DBFO deal is often spent tackling the project-specific details of termination, as equity and debt investors in the project need the comfort of reasonable provisions on termination, including rights to 'step in'. These provisions will be very project specific, irrespective of any standard starting point in the contract. The ECC at least has well-structured provisions for termination covering

- 'reasons for termination'
- 'procedures on termination' and
- 'payment on termination'.

This basic, very logical structure of NEC is ideal for projectspecific and necessary additions to the termination provisions to suit the particular deal.

5.10 Disputes

NEC contracts are designed to help dispute avoidance. If, despite this, there are disputes, then all the contracts have adjudication as the first stage in the dispute resolution process and require a final tribunal to be stated – either arbitration or the courts. The mechanism is provided by choosing option W2 for a process modified to suit the law in the UK or option W1 as a good starting point for the adjudication process outside the UK. For DBFO contracts, some clients and/or project companies may prefer alternative or additional approaches such as mediation and/or a dispute adjudication board. This has members appointed at the start of the contracts to assist in dispute resolution and adjudicate when required. Since the dispute process is a neat secondary option in NEC contracts, its replacement by a desired alternative would not be difficult. This is already the case in government contracts in Hong Kong.

All of the above issues specific to DBFO could be provided for by incisive additional conditions of contract. Hence, the structure of the NEC contracts for the project agreement in a DBFO deal would be the same in principle as that for a DBO contract – as set out above in Figure 1.

6. How else might NEC help?

DBFO contracts are generally priced contracts, set up to pass most if not all risks to the project company, which in turn passes on the risks to its subcontractors. Because of this, there is very little commercial incentive for public and private sectors (employer and project company) to collaborate – not ideal for a long-term agreement for PPP. In contrast, the NEC contracts include a number of features and options that are specifically designed to aid collaboration (Patterson, 2011). In particular, one option might be for the payment mechanism to be based on target price or prices rather than on fixed prices. The TSC (and the ECC) includes an option for a target cost (rather than fixed price) contract. The effect of this is that the employer is commercially incentivised to work with the project company to bring down the project company's costs – for the mutual benefit of both parties.

7. What other concerns might funders and their legal advisers have?

7.1 Too much involvement of the NEC project manager?

DBFO funders usually require the employer to adopt a 'hands-off' approach for fear that any pro-active involvement might result in the project company acquiring additional liabilities. In the NEC, the employer's 'project manager' (ECC) and service manager (TSC) do have active roles. These people are required to manage the change process - but there should not be frequent changes. The ECC project manager is required to accept any contractor's design submissions set out in the contract. But the employer can (and must) decide what (if any) such design submissions are required. And the contract is very clear that acceptance by the project manager 'does not change the contractor's responsibility to provide the works or his liability for his design'. The ECC project manager is also required to accept the contractor's programme (a key part of ECC). In this, he or she must be careful about accepting any obligations of the employer on the programme but those obligations should have been spelt out in the contract.

7.2 Timescales too tight?

The NEC gives clear timescales for the response to each communication – there is no 'reasonable time'. The timescales set out for the compensation event agreement process may well have to be extended to give time to include the effect on the financial model and the probable need for approval from funders. The standard 2 weeks to accept or not accept a contractor's programme should be manageable. The default for all other communications is the 'period of reply', which is set specific to the contract.

8. Conclusion

DBFO deals are complex and critical for the development of the world's infrastructure. There is a huge industry worldwide setting up, negotiating and implementing DBFO (PPP) deals in almost all sectors. As noted above, investment is often made in a degree of standardisation for PPP contracts in countries where there is a clear pipeline of projects. However, it is suggested that further standardisation would be beneficial to many users. It is recognised that funders and their legal advisers may well resist the use of a 'new' form of contract based on a standard form. However, this article has shown that, as far as the main project agreement

is concerned, the step from DBO to DBFO is not so huge. Therefore, if NEC can be used for DBO – and it can – then NEC could be used in principle for DBFO. NEC as a basis for a DBFO project agreement will not be a panacea. However, this article has shown that the use of NEC is possible as a base for a DBFO contract and that it could have a number of advantages.

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