

## Appendix 14 – Commercial Case – Alternative Procurement Options

### 1. Rejected Procurement Options

#### Introduction

The four main options for the overall procurement route are:

- Design and Build (including Early Contractor Involvement)
- Prime Contracting
- PFI
- Traditional approach

The Prime Contracting, PFI and the traditional approach to the procurement of the Kingskerswell Bypass have been rejected for the following reasons.

#### Prime Contracting

Prime Contracting is most commonly used when the project is time driven and the full requirements cannot be defined by the Client at the start of construction. The Prime Contractor (PC) can be incentivised to deliver within budget but there is no price certainty for the Client at the outset of the work.

PC would involve transferring full delivery responsibility to the PC Co. They could set up an integrated team with the Client but would wish to take the key management positions. The fee paid to PCs tends to be high and the approach is mainly associated with high value projects. A project the size of KKW Bypass would not attract the main companies associated with delivering PC services and so the approach would not be likely to add any value over a conventional approach and would probably incur higher costs.

The risks for the PC are high if they are required to deliver within a specified budget and their fee in those circumstances could be expected to be very high. The PC would not be in a position to manage effectively all of the risks associated with the delivery of the bypass and for certain requirements would be dependent upon third party approval. Key risks would include traffic management approvals, land entry, third party works, detailed requirements for connections with existing roads, drainage outfall consents and work on statutory undertaker's equipment and apparatus.

There are no apparent benefits of using this approach on Kingskerswell Bypass and such an approach could well deter some major suppliers from bidding for construction contracts if required to work to a Prime Contractor.

#### PFI

The use of PFI for a relatively small and isolated section of the road network is not likely to be attractive to the PFI roads market and nor is it likely to offer value for money.

The current trend in the DBFO roads sector is for larger projects as evidenced by the current projects which have been put out to the market for the M25 Widening and the Birmingham PFI Maintenance, both of which are multi-billion pound contracts.

The Kingskerswell Bypass would not offer the same potential economies of scale and would reduce the potential economies available in the existing maintenance arrangements in South Devon. On its own, the section of road covered by the Bypass would not offer a viable area

for efficient maintenance operations and it would introduce unnecessary and undesirable interfaces with the adjacent arrangements for the maintenance and operation of the network. The local business and tourist traffic demands in this area would mean that responsibilities for road operations would need to remain with the Highway Authority to provide the flexibility needed to manage the pressures at peak periods over the wider area.

The DBFO contract which could be compared most closely with the A380 Kingskerswell Bypass is probably the A69 DBFO contract in Northumbria. The NAO report into the first tranche of DBFO contracts showed that the value for money on the A69 contract was very marginal.

Overall, it is considered unlikely that a PFI approach would attract good competition and would be unlikely to offer significantly better value for money than a conventionally funded approach.

### **Traditional approach – Engineer design**

The traditional approach to procurement generally refers to the procurement route in which the Client or its Consultant does all the design before putting the project out to tender and selecting a contractor, often on the lowest price, to construct the design. The Consultant or Engineer retains responsibility for the design. This form of contracting was normally based on Bills of Quantities where the Client took the risk on the quantities and the Contractor took the risk on prices.

The traditional approach became very associated with adversarial relationships, disputes and claims, particularly when used with lowest price tendering, due to the opportunities within the BoQ and the claims procedures to manipulate prices and manufacture claims.

The design solutions under this approach also suffered due to the lack of contractor and supply chain input into the planning and design process. The opportunity for contractor innovation was extremely limited due to the late stage at which they were engaged and by a general unwillingness on the part of Consultants to accept alternative design solutions for which they were required to accept responsibility.

### **Disadvantages of the traditional approach**

- a. There is no input into the design by the Contractor or its supply chain and the opportunity for further value engineering, buildability improvements and alternative methods is constrained by the time available and the willingness of the Engineer to accept changes.
- b. The lack of integration between the design and the construction and the separate responsibilities means that there is considerable potential for cost and time overruns if problems occur.
- c. Design quality may not be at a high enough quality at tender stage to provide a robust basis for reliable tenders and the risk of any design errors or omissions lies fully with the Client.
- d. The Client is unlikely to receive a good share of savings that arise from any improvements that are identified and incorporated.
- e. The Contractor is engaged late in the process and has limited time to familiarise themselves with the project and the risks, and to undertake their planning of resource requirements and the programming of the work.
- f. The late appointments of specialist suppliers could mean that the best companies or their best teams are engaged on other projects.

- g. Tender price plays a major part in the selection process and tenderers can be expected to look for any opportunities to recover additional money through changes and claims and to keep the tender price low.
- h. The Engineer requires a substantial team to supervise the works which is expensive and often leads to relationship problems between the teams.
- i. The traditional approach fell into disrepute in the mid-1990s due to the very adversarial approach and substantial cost and time overruns that occurred on many contracts.
- j. The traditional approach is not one of the Office of Government Commerce (OGC) permitted procurement routes for publicly funded projects and is unlikely to be favoured by the DfT.

## **2. Detailed Process of the D&B approach with a design refinement period. (Referred to as Early Contractor Involvement - late appointment)**

The D&B with a design refinement period would follow the process set out below:

- Devon CC to complete the design needed for inviting tenders for the construction of the bypass and prepare tender documents
- Following approval to the Programme Entry Major Scheme Bid, commence the procurement of ECI (late appointment) Contractor
- Award the contract on the basis of quality and price with an initial contract (target) price
- Incorporate an initial Phase 1 period, after contract award, for the Contractor to support the statutory processes and to review and refine the design of the work
- Following public inquiry continue to refine and value engineer the scheme design and commence appropriate design and planning for the construction of the works
- When formal approval is received to go ahead with the project apply for Conditional Approval to the funding from DfT (the contract would contain a breakpoint in case the draft Orders are not confirmed or funding is not approved)
- When the start of works date is agreed, determine the final contract (target) price which would be based on the initial price with agreed savings for any design refinements
- Seek Full Approval for the funding from DfT based on the contract target price
- Complete the detailed design and commence construction.

The particular benefits this approach would offer are:

- Contractor and supply chain input into the finalisation/optimisation of the detailed design process
- Contractor and supply chain review of buildability
- Minimised tendering costs
- Improved incentives and arrangements for ongoing value engineering
- Flexibility in the timing of the start of construction to fit in with approval of project funding
- The approach incorporates the benefits of early contractor involvement and achieves the principles of Achieving Excellence

### **3. Options for the Form of Contract**

The main forms of contract which are available are:

- NEC3
- HA Design and Build
- ICE7
- ICE Target Cost
- JCT
- PPC 2000

#### **New Engineering Contract – NEC3**

##### **Background to the NEC contract**

The first edition of the NEC was published in 1993 and was developed as multi-disciplinary contract which can be used for engineering and construction work containing any or all of the traditional disciplines such as civil, electrical, mechanical and building work. It is now widely used across the UK building and construction sectors and it is likely that all leading UK suppliers will now have considerable experience in its use. The NEC was used on the CTRL project and was perceived by the industry as being a key factor in the successful delivery of the project.

There were three main objectives behind the development of the NEC – flexibility, clarity and simplicity and stimulus to good management.

The NEC3 is designed to be as flexible as possible and can be used across the range of traditional disciplines. It accommodates the Contractor having full, part or no design responsibility. It provides all current options for types of contract such as competitive fixed price tenders, target contracts, cost reimbursable contracts and management contracts. These options are discussed in more detail in

The NEC3 is written in ordinary language and the unconventional style initially raised concerns in some parts of the industry from people who were reluctant to move away from traditional legal drafting. The widespread use of NEC contracts now means that many more people in the industry are now familiar with the style of the contract and it is the other traditional forms of contract that are now looking dated and old-fashioned.

Probably the most important characteristic of the NEC3 is the stimulus it provides to good management practice. This aspect is founded on the proposition that foresighted, co-operative management of the interactions between the parties can reduce the risks inherent in construction and engineering work. Key features include early warning procedures, compensation events and the maintenance of the programme for the works.

##### **NEC3 risk allocation**

The approach in NEC3 is to allocate the risks in the project as fairly as possible and to support the most effective ways of managing the risks and minimising the cost consequences. The NEC3 incorporates a risk register which provides early warning of risks and provides transparency in how risks will be managed.

It has been suggested that the risk allocation in NEC3 is contractor friendly and that Clients should require Contractors to carry as many risks as possible. The consequence of this however, is that tender prices will either contain high risk premiums or that contracts will be

won by suppliers with the best claims departments rather than those who are best at delivering successful projects.

### **NEC3 Culture**

The NEC3 is a partnering contract in line with Achieving Excellence principles.

### **NEC3 Management and Communications**

The NEC3 is set up to stimulate good management practices between the parties so as to manage risks effectively and minimise cost consequences. The Client needs to ensure that it has sufficient capable resources to manage the project. In practice however, the numbers involved should be no more than those required on any other well-managed contract regardless of the form of contract. There would be a need for a comprehensive training and development programme to ensure that Devon's project management team are fully equipped to deliver their roles and responsibilities in line with the NEC approach.

### **NEC3 Change Control and pricing procedures**

The NEC3 requires early and prompt consideration of any matters which may affect the price paid by the Client. The contract does provide incentives the Contractor to minimise the actual costs.

### **NEC3 Contractual payment mechanism and performance incentives**

The NEC3 provides 6 main options which are set out in Appendix B. The option most likely to deliver best value is the target cost approach. It would be possible to incorporate additional performance incentives proposed at the tender stage.

### **NEC3 Attractiveness to the Supply Chain**

The NEC form of contract is now well known to UK based contractors and has proved to be attractive and deliver good results. All Highways Agency major projects contracts are based on the NEC.

### **HA Design and Build**

The HA D&B contract has now been dropped by the HA as it was no longer delivering the certainty of price expected when it was launched in the mid-1990's. There have also been problems of quality being compromised as a result of unsustainable lump sums. The contract can work effectively but the risks of cost overruns and poor quality are significant. It is also likely that the use of the contract and the high tendering costs associated with it would deter potential contractors from bidding.

The contract was developed to achieve price certainty following the period of large cost overruns in the early 1990's. It sought to do this by transferring nearly all risk to the Contractor. The contract was based on Employer's Requirements and experience showed that errors and omissions or the need for changes resulted in claims for considerable additional costs. The initial contracts worked quite well but subsequent contracts had problems associated with poor quality and disputes on claims. On one contract costs increased by around 20% over the contract lump sum and there is an ongoing dispute on the need for remedial works.

## ICE7

The first edition of the ICE Conditions of Contract was launched in December 1945. The 7<sup>th</sup> edition is based on the traditional pattern of Engineer-designed, Contractor-built Works with valuation by remeasurement. It has however, been revised and updated to try and take on board the findings of the Latham and Egan Reviews.

The revisions have been made to try and develop a more co-operative form of contract but the ICE Conditions are still closely associated by many in the industry with the adversarial relationships and the claims culture of the last decade. There are sufficient people remaining in the industry from that period who would relish the opportunity to revert back to a claims culture.

The allocation of risk is inflexible in its standard form. It would be possible to amend the contract to a target cost arrangement but the ICE has already done this in the form of the ICE Target Cost contract which is discussed below.

### ICE Target Cost

The ICE Conditions of Contract Target Cost Version, First Edition was published in February 2006 and is therefore, a very new contract and there is little information on its use in practice. The contract is based on the standard ICE approach of an Engineer design and the Contractor has no responsibility for the design or specification except as expressly provided in the contract.

The ICE promotes the contract as encouraging collaborative working in a spirit of mutual trust and the earlier involvement of the contractor in the development of the project. These potential benefits however, are not directly supported by the wording of the contract but would be delivered by the Employer and the Contractor adopting good management practice and a partnering culture.

On the face of it the ICE Target Cost contract looks very much like the standard ICE conditions adapted for payment to be made on the basis of a standard target cost approach. The opportunities for claims appear to be similar to the standard ICE contract except that in the Target Cost a successful claim would lead to the adjustment of the target rather than entitlement to payment. The valuation of any variation or claim arising from an Employer risk shall wherever possible be agreed before the work starts but this is not an essential requirement of the contract. This carries a high risk that the reliability of the latest estimate of the target price will fall behind the progress on the works which could lead to difficult commercial relationships.

The contract retains the traditional role of the independent Engineer who has authority to order any variation necessary for the completion of the works and any other desirable variation. The Engineer also has responsibility for determining entitlement to payment and establishing the valuation of variations and claims. The introduction of a third independent party into the partnership arrangement does sit comfortably with the desired objectives particularly as the Engineer's incentives are not aligned with the objectives of the Employer and the Contractor.

Overall, whilst it appears that the contract could be made to work successfully where the parties have established trust and good working relationships, probably in the context of a long-term relationship, it would be high risk to adopt this contract with newly formed partners. This risk will be present because at the start of the competition the outcome of the supplier selection procedure will not be known. It would also be a high risk to adopt this very new contract which has not yet been tested on a major project.

## **JCT**

The JCT suite of contracts is generally associated with the building sector. The JCT is another contract with similarities to the ICE conditions and therefore, generally perceived as being prone to adversarial behaviours.

Over the last couple of years there has been an avalanche of new and revised JCT contracts. This included in 2005 a JCT Major Project Construction contract which provides for a high degree of risk transfer to the Contractor. There is however, very little evidence of its implementation on major projects to date and so it would be high risk to pilot its use on this project.

## **PPC2000**

The PPC2000, first published in 2000 by the Association of Consulting Architects, describes itself as being “the first Standard Form Project Partnering Contract”. Key features include the integration of the team under a single multi-party contract, mandatory pre-construction phase procedures and an extensive procedural framework that supports the partnering process.

The pre-construction procedures do not appear to be very pragmatic or deliverable in practice. The contract sets out twelve pre-conditions before the Contractor can commence on site. These include the full selection and involvement of supply chain specialists, the development of supply and construction processes and agreement on the project timetable which governs the activities of team members.

The PPC2000 is a bold step along the route to project partnering and more closely integrated project teams. It would be interesting to test the contract on a major single contract but it would be a major challenge to put in place the people and the procedures to administer a substantial number of these forms of contracts.

## **NEC3 Options**

### **NEC3 Main Options**

There are six main options as set out below. The Contractor carries the greatest risk under options A and B, and least risk under options E and F.

#### **Option A: Lump Sum priced contract with activity schedule**

The Contractor offers to provide the works described in the contract for a sum of money. The contract provides for certain risks to be carried by the Employer which will result in the lump sum being adjusted if the compensation events occur.

The activity schedule is normally written by the Contractor since he is the one who knows what activities will be carried out. Each activity is priced as a lump sum by the Contractor which is the amount paid when he has completed the activity. In pricing an activity, the Contractor takes responsibility for estimating quantities and resources, and assessing and pricing risks that are his.

#### **Option B: Remeasurement priced contract with bill of quantities**

The Employer provides a bill of quantities which is priced by the Contractor. The contract price is the sum of prices for all items in the bill which may include lump sums for certain items. When the work is done, if it is found by remeasurement that the estimated quantity is not correct, it is corrected and payment is made to the Contractor to reflect the actual work carried out. Under this option, unlike Option A, the Employer takes the risk of the correctness of the quantities.

Option B would normally be used where the risk of change in quantities is relatively high. It is not appropriate for design and build contracts since the Contractor is responsible who designs and prepares the detailed design and plans.

#### **Option C: Target Cost contract with activity schedule**

In this option the Contractor tenders (or negotiates) a target price using an activity schedule. Each activity is priced as a lump sum and a Fee is also tendered as a percentage for subcontract work and for the Contractor's own direct work. The initial target price is the sum of the activity prices and the fee. During the course of the contract, the target price is adjusted to cater for compensation events that are set out in the contract.

Payment is made on the basis of actual costs with an incentive mechanism for the Contractor to minimise costs. Savings and over-runs are shared between the parties. The sharing of risk in the target cost approach is likely to reduce the occurrence of disputes.

#### **Option D: Target Cost contract with bill of quantities**

This is similar to Option C except that the target price is established by means of a bill of quantities rather than an activity schedule. During the course of the contract, the target price is adjusted to allow for changes of quantities as well as for compensation events. Thus, the Employer carries a rather greater risk than is the case with Option C.

#### **Option E: Cost Reimbursable contract**

Under this option the Contractor takes a very small risk since he is paid his actual cost plus the Fee with only a small number of constraints to protect the Employer from inefficient

working or incompetence by the Contractor. It is used when the work to be carried out cannot be defined at the outset and the risks are high. It may also be used for emergency work.

### **Option F: Management Contract**

This option is suitable for management contracts in which all or most of the work is done by sub-contractors, and the Contractor manages the procurement and the work undertaken by the sub-contractors. Payment is made to the Contractor for the cost of the sub-contracts plus a management fee. The Employer carries most of the risk.

### **NEC3 Compensation Events**

Clause 60.1 lists nineteen compensation events, it states that:

'The following are compensation events.

- (1) The Project Manager given an instruction changing the Works Information except
  - a change made in order to accept a Defect or
  - a change to the Works Information provided by the Contractor for his design which is made either at his request or to comply with other Works Information provided by the Employer
- (2) The Employer does not allow access to and use of a part of the Site by the later of its access date and the date shown on the Accepted Programme.
- (3) The Employer does not provide something which he is to provide by the date for providing it shown on the Accepted Programme.
- (4) The Project Manager gives an instruction to stop or not to start any work or to change a Key Date.
- (5) The Employer or Others
  - do not work within the times shown on the Accepted Programme
  - do not work within the conditions stated in the Works Information or
  - carry out work on the Site that is not stated in the Works Information.
- (6) The Project Manager or the Supervisor does not reply to a communication from the Contractor within the period required by this contract.
- (7) The Project Manager gives an instruction for dealing with an object of value or of historical or other interest found within the Site.
- (8) The Project Manager or Supervisor changes a decision which he has previously communicated to the Contractor.
- (9) The Project Manager withholds an acceptance (other than acceptance of a quotation for acceleration or for not correcting a defect) for a reason not stated in the contract.
- (10) The Supervisor instructs the Contractor to search for a Defect and no Defect is found unless the search is needed only because the Contractor gave insufficient notice of doing work obstructing a required test or inspection.
- (11) A test or inspection done by the Supervisor causes unnecessary delay.

(12) The Contractor encounters physical conditions which

- are within the Site
- are not weather conditions and
- an experienced contractor would have judged at the Contract Date to have such a small chance of occurring that it would have been unreasonable for him to have allowed for them.

Only the difference between the physical conditions encountered and those for which it would have been reasonable to have allowed is taken into account in assessing a compensation event.

(13) A weather measurement is recorded

- within a calendar month
- before the Completion Date for the whole of the works and
- at the place stated in the Contract Data

the value of which, by comparison with the weather data, is shown to occur on average less frequently than once in ten years.

Only the difference between the weather measurement and the weather which the weather data show to occur on average less frequently than once in ten years is taken into account in assessing a compensation event.

(14) An event which is an Employer's risk stated in the contract.

(15) The Project Manager certifies take over of a part of the works before both Completion and the Completion date.

(16) The Employer does not provide materials, facilities and samples for tests and inspections as stated in the works information.

(17) The Project Manager notifies a correction to an assumption which he has stated about a compensation event

(18) A breach of contract by the Employer which is not one of the other compensation events in the contract.

(19) An event which

- stops the Contractor completing the works or
- stops the Contractor completing the works by the date shown on the Accepted Programme,

and which

- neither party could prevent
- an experienced contractor would have judged at the Contract Date to have such a small chance of occurring that it would have been unreasonable for him to have allowed for it and
- is not one of the other compensation events stated in this contract.'

#### **NEC Secondary Option Clauses covering other risks**

X1 – Price adjustment for inflation.

X2 – Changes in law.

- X3 – Multiple currencies (used only with options A & B)
- X4 – Parent company guarantee.
- X5 – Sectional completion.
- X6 – Bonus for early completion.
- X7 – Delay damages.
- X12 – Partnering
- X13 – Performance bond.
- X14 – Advanced payment to the Contractor.
- X15 – Limitation of the Contractor's design liability to reasonable skill and care.
- X16 – Retention.
- X17 – Low performance damages.
- X18 – Limitation of liability.
- X20 – Key Performance Indicators (not used with option