

ANGUS COUNCIL

INFRASTRUCTURE SERVICES COMMITTEE – 25 AUGUST 2005

RESOURCES & CENTRAL SERVICES COMMITTEE - 1 SEPTEMBER 2005

BRECHIN FLOOD PREVENTION SCHEME
EARLY CONTRACTOR INVOLVEMENT

REPORT BY THE DIRECTOR OF ROADS

ABSTRACT

This report outlines the contract options which have been considered for the procurement of the Brechin Flood Prevention Scheme and recommends the NEC target form of contract with early contractor involvement in the development of this specialist nature scheme prior to the construction phase.

1 RECOMMENDATION

1.1 It is recommended that both Committees agree:-

- (i) to note the contract options which have been considered for the Brechin Flood Prevention Scheme and the expected benefits and risks associated with the NEC target form of contract with early contractor involvement
- (ii) to the procurement of the Brechin Flood Prevention Scheme using the NEC target form of contract with early contractor involvement in the development of the scheme prior to the construction phase.

2 BACKGROUND

2.1 For engineering and construction type works the Council has traditionally adopted one of the following approaches to the form of contract:

- Admeasure contract
- Design and build contract

2.2 More recently the Council has also taken forward two Education projects using a partnering form of contract. The following paragraphs give a broad overview of how the above forms of contract operate.

2.3 Admeasure Contract

2.3.1 Many of the Council's projects are procured using admeasure contracts. This approach generally involves the Council working up a detailed specification and bill of quantities which are incorporated in tender documents and which potential contractors are then invited to price on a competitive basis. This approach can work well when the specification is not overly complex and the level of quality of output can be readily determined within the specification. In these situations the Council simply seeks to achieve the best price for delivering the same prescribed specification.

2.3.2 Although this approach identifies a firm price through competition prior to work commencing it can lead to an adversarial relationship between client and contractor and if problems are encountered once works have commenced can result in claims from the contractor for additional costs incurred. The admeasure contract is perhaps best suited to relatively straightforward projects where contractor expertise in the scheme development isn't necessary.

2.4 **Design & Build Contract**

2.4.1 The Council has also undertaken a number of projects using a design and build contract approach. The Montrose Bridge replacement project was taken forward on this basis and the new Council HQ at Orchardbank is likewise being taken forward on a design and build basis. This type of contract is useful where contractor input to the design is considered desirable or essential. The level of design input from the contractor can however vary from relatively minimal input to a base design worked up by the Council to a more significant involvement from the early stages. Like the admeasure contract this type of contract also allows competitive tenders to be received from contractors. This type of contract can deliver improved cost certainty for the Council as it effectively passes virtually all design and construction risk to the contractor. This can however lead to a higher overall cost depending on the contractor's view of the project risks.

2.5 **Other Methods of Procurement**

2.5.1 In the context of the Brechin Flood Prevention Scheme the Director of Roads has been considering what method of procurement might best suit the circumstances of the project. The complex and specialist nature of the project suggests a design and build contract would be more suitable than an admeasure contract in this instance. However an alternative form of contract which could deliver the advantages of contractor input to the design and specification but also potential benefits from taking a more measured approach to the sharing of contract risks has been identified. This alternative approach is known as early contractor involvement and the remainder of this report outlines this method of approach in more detail and the benefits which it is considered it will be able to deliver for the Brechin Flood Prevention Scheme.

2.6 **EARLY CONTRACTOR INVOLVEMENT**

2.6.1 The term "early contractor involvement" (ECI) is a form of partnering where the contractor is involved in a project's development prior to the construction phase commencing.

2.6.2 The advantages of ECI are as follows:

2.7 **Enhanced Practical and Financial Consideration of Scheme Proposals**

2.7.1 Although the internal and external consultancy teams bring a wealth of experience to the scheme design, having a contractor with first hand construction experience of flood prevention schemes on the project team can be of benefit in that the practicalities of constructing the proposed works can be considered in more detail, and all potential time/cost savings can be investigated thoroughly, prior to the scheme being constructed. Areas where this would be of significant benefit are listed below:

- Environmental Design Group Consultations

- Landowner Consultations
- Public Consultations
- Planning Consultations
- Final Scheme Design

2.7.2 However, there is a need to ensure that construction elements which may prove potentially more profitable to the contractor are not incorporated into the design without attendant benefits to the scheme as a whole. There are a number of different payment mechanisms for this type of procurement arrangement. A target contract approach is the preferred strategy for the procurement of the Brechin Flood Prevention Scheme because it guards against increasing costs by rewarding the contractor when savings are achieved. Under a target contract the contractor receives a percentage share of any savings realised against the target cost (Appendix 1 sets out an option appraisal on the proposed form of contract and provides further details on how the proposed approach would work in practice).

2.8 **No Express Allowance in Project Programme for Contractor Mobilisation**

2.8.1 By having a contractor on board prior to the construction start date, notice of the construction start date can be given much further in advance therefore negating the usual allowance in the project programme required to allow the contractor to mobilise resources, thus decreasing the length of project programme by a period of typically four weeks.

2.9 **Increased Accuracy of Cost Estimates and Risk Allowances**

2.9.1 Having a contractor on board prior to the construction start date will also allow quotations for specialist - and potentially expensive - items such as sheet piling, bentonite slurry trenching, etc to be assessed more accurately, which can then be fed into the scheme budget estimation at an earlier stage.

3 **DETAILS**

3.1 **Procurement Process**

3.1.1 Before awarding the contract, a select list of tenderers will be drawn up on the basis of expressions of interest in response to advertisements in appropriate technical publications and in the national press. These contractors will be asked to submit a tender on the basis of their experience, competence, health and safety record, design capability and target cost for the works. A most economically advantageous tender (MEAT) assessment will be used to evaluate the tenders with a 30/70 quality/price ratio.

3.2 **Timing**

3.2.1 The timing of early contractor involvement is critical in determining the level of constraints placed upon the contractor's input into the design and construction processes. The earlier the contract is let, the fewer constraints will have been determined by consultation, and the risk of changes to the target cost will be increased. Conversely, the later the contract is let, there will be less opportunity for contractor involvement, decreasing the potential for contractor input to the scheme design. In order to achieve best value for the Council by striking a balance between these two extremes, it is proposed to put the contract out to tender following the public consultation period.

3.3 Form of Contract

- 3.3.1 It is proposed that a “target” form of contract be used, promoting a partnering relationship between the two parties so as to reduce the contract time/cost, with both parties sharing in any resulting savings. It is proposed to use the Institution of Civil Engineers New Engineering Contract (NEC) Option C as the form of contract. Appendix 1 details how this form of contract operates in practice.

3.4 Project Programme

- 3.4.1 A brief synopsis of the project programme has been provided in Appendix 2 to this report.

3.5 PROJECT UPDATE - SCOTTISH WATER FUNDING

- 3.5.1 There are two Scottish Water sewer pipelines at Brechin that drain excess storm water into the River Southesk during storm events. One is situated on the Inch upstream of Old Brechin Bridge adjacent to the SEPA monitoring station, and the other downstream of Old Brechin Bridge at Den of Leuchland. In addition a natural watercourse discharges road and curtilage run-off into the river at the upper end of River Street.
- 3.5.2 All three of these features are likely to cause flooding in Brechin by backing up when the river is in spate once the proposed walls and embankments are put in place.
- 3.5.3 The pipelines are owned and maintained by Scottish Water, and the Scottish Executive has confirmed that they will not fund a scheme promoted by Angus Council which includes the upgrading of Scottish Water plant. Funding for the plant required to prevent backing up of the natural watercourse is likely to be shared between Angus Council and Scottish Water since the watercourse carries road surface water run-off as well as building curtilage drainage
- 3.5.4 Currently Scottish Water has not confirmed whether funding for their required plant upgrades has been allocated in line with the current scheme programme.
- 3.5.5 Should this funding not be in place when planning applications are being processed next year, the 80% central government grant will not be made available to fund the flood prevention scheme at Brechin, resulting in the project being postponed until this issue is resolved.
- 3.5.6 In light of the above, a letter was sent from the Council’s Chief Executive to the Chief Executive of Scottish Water on 6 July 2005 regarding their intentions (see Appendix 3). Although this request has been initially discussed by telephone a formal response is still awaited at the time of writing this Report.

4 FINANCIAL IMPLICATIONS

- 4.1 The costs of preparing, issuing and administering a contract with ECI are similar to those involved in a standard construction contract. There are therefore no additional cost implications attaching to the procurement arrangement.
- 4.2 The procurement of the Brechin Flood Prevention Scheme using ECI and the NEC target form of contract is a new approach for Angus Council and the anticipated benefits of this approach must be considered alongside some of the potential risks.

- 4.3 The benefits of the NEC target form of contract have been outlined elsewhere in this report but in a financial context the main benefit is the potential for cost savings to be identified both prior to and during construction. The contract will be specifically set up to incentivise the contractor to generate savings which are then shared between the contractor and the Council. The contractor is also incentivised to minimise cost increases – see examples in Appendix 1. This form of contract on this project may also allow work to begin more quickly and this will have a benefit in relation to inflation costs. The financial risk lies in the possibility that costs could go up as well as down as the project progresses, the target cost is not a guaranteed price and the Council won't know the final cost of the project until the work is concluded. However, the other forms of contract arrangements available to the Council also carry such financial risks.
- 4.4 Although this proposed means of procurement is new for Angus Council it is a tried and tested approach which has been used successfully on other civil engineering projects and in a Local Authority context. There are also some safeguards for the Council in that if the early involvement of the contractor fails to deliver the benefits expected then the Council could revert to a more traditional form of contract prior to construction commencing. Although this may create time delays and additional costs it does allow the Council the option of moving forward on a different basis. Members may also take comfort from the fact that the initial selection of the contractor with whom the Council wants to move forward will be based on a robust competitive process.
- 4.5 As members will be aware the Brechin Flood Prevention Scheme is being taken forward on the basis that 80% grant from the Scottish Executive will be available to help fund the project. The Executive have still to consider whether they will provide funding for the project but it is understood that they are familiar with and recognise the NEC target form of contract and accordingly this means of procurement would be acceptable to them should they decide to approve the Council's grant application.
- 4.6 The specialist nature of the Brechin Flood Prevention Scheme is well suited to having early contractor involvement and whilst this is a new approach for the Council which has some risks attached it is considered that these risks are outweighed by the many potential benefits which could accrue. The Council's exposure to these risks can also be managed by the approach to risk allocation which the Council will adopt.
- 4.7 It is commented that such contracts have operated successfully in other Councils and Angus Councils has the benefit of having a senior employee who has experience in the operation and administration of this procurement arrangement.

5 CONSULTATION

- 5.1 The Chief Executive, the Director of Law and Administration, the Acting Director of Finance and the Director of Planning and Transport have been consulted in the preparation of this report.

6 HUMAN RIGHTS IMPLICATIONS

6.1 There are no human rights implications arising from the proposals in this report.

7 CONCLUSION

7.1 In order to capture the benefits of enhanced practical and financial consideration of scheme proposals, a reduction in the overall timescale for the project, and increased accuracy of cost estimates and risk allowances, it is proposed to procure the Brechin Flood Prevention Scheme using an early contractor involvement/target form of contract.

R. W McNeil
DIRECTOR OF ROADS

NOTE:

No background papers, as defined by Section 50D of the Local Government (Scotland) Act 1973 (other than any containing confidential or exempt information) were relied on to any material extent in preparing the above Report.

DD/JSG
8 August 2005
REPORTS/brechin.flood.cont

**ANGUS COUNCIL
ROADS DEPARTMENT**

**BRECHIN FLOOD PREVENTION SCHEME
EARLY CONTRACTOR INVOLVEMENT AND THE NEW ENGINEERING
CONTRACT (NEC) TARGET FORM OF CONTRACT**

This appendix provides details on the method of procurement of works utilising early contractor involvement and the NEC target form of contract.

NEC - EXAMPLE OF GOOD PROCUREMENT PRACTICE

In March 2005 the NEC form of procurement was held up as an example of good practice by the National Audit Office in their report entitled "*Improving public services through better construction.*":

'Departments should use forms of contract that embed the principles of collaborative working and good project management. For example, the Engineering and Construction Contract is being widely used in many successful partnership arrangements in both the private and public sectors.'

The above report is due to be considered for adoption by the Public Accounts Committee within the next few months.

NEC DEVELOPMENT

The time-honoured forms of procurement used for civil engineering works have generally taken two basic forms in the past; one apportions the greater amount of risk to the contractor (ie. design and build) while the other allocates this to the client (traditional contract i.e ICE 5th etc). The New Engineering Contract has been developed by the Institution of Civil Engineers in order to promote a non-adversarial approach to procurement, encouraging a shared approach to risk allocation and therefore promoting a partnership approach to reducing project delays and costs, and also including a target cost approach to procurement.

NEC MAIN OPTIONS

The NEC contains a suite of procurement sub-options from which the client can choose so as to reflect the degree of financial control (and the resulting risk) that the client wishes to retain.

- A. Priced Contract with Activity Schedule
 - The contractor defines and prices activities required to meet the specifications provided by the employer, the contractor has burden of financial risk.

- B. Priced Contract with Bill of Quantities
 - As above but the employer prepares a bill of quantities for the contractor to price, the employer has the burden of financial risk.

- C. Target Contract with Activity Schedule

- Used where risks and the work cannot be fully identified at tender stage, contractor prepares and prices an activity schedule to meet the contract requirements. The burden of financial risk is dependant upon the level of specification by the employer.
- D. Target Contract with Bill of Quantities
- As above but used where the risk and work can be more readily identified at tender stage, contractor prices bill of quantities prepared by the client, the employer has the burden of financial risk.
- E. Cost Reimbursable Contract
- The contractor is reimbursed for his actual cost plus a tendered fee, this means a high financial risk for the client.
- F. Management Contract
- Developed to deal with the wide range of currently used arrangements for the procurement of management services and project management contracts.

NEC Main Option C – Preferred Option

The NEC Main Option C is in effect a “partnering contract” between two parties, requiring collaboration and innovation in order to reduce the contract time / cost factors so that both parties may share in the resulting cost savings. This option is recommended for the Brechin Flood Prevention Scheme as in addition to the above, it allows the greatest amount of flexibility with regard to sharing risk, this being dependant upon the specification and contract data provided by the employer at tender stage.

The NEC Main Option C has been used extensively through the UK private and civil engineering sectors as follows:

- *“England’s National Health Service is now using the NEC for more than 200 hospital building projects worth over £2 billion. All the projects are being procured under the NHS Estates’ ProCure21 framework programme, which is based on option C (target contract with activity schedule) of the NEC Engineering and Construction Contract (ECC).”*
- *“Rotherham Metropolitan Borough Council has chosen the NEC Engineering and Contract (ECC) option C (target contract with activity schedule) for all its non-housing building framework contracts, estimated to be worth around £15 million a year.”*
- *“The first 74 km section of the NEC-procured, £5.2 billion Channel Tunnel Rail Link (CTRL) won a second major project award in the British Construction Industry Awards (BCIA), announced in December 2004. All work is being carried out under option C (target cost with activity schedule) of the NEC Engineering and Construction Contract. The form was chosen by Rail Link Engineering because it ‘met the project’s time constraints, shared cost risk and gave the highest probability of a successful outcome’.”*

STAGED FORM OF CONTRACT

It is proposed to use a staged form of contract whereby each stage of the contractor's involvement is distinct from another as follows:

NEC Contract Staged Approach – Stage 1

The first part of this contract will require the successful tenderer's nominated contracts manager to participate in:-

- Environmental Design Group
- Landowner, Public and Statutory Consultee Consultations
- Development of Scheme Specification, Drawings and Costs

and all his/her time will be fully costed and monitored on a monthly basis. Monitoring of the contractor's time will be critical to ensure that items normally associated with construction are not being paid for under this arrangement. The purpose of this stage is to bring the projected final cost down as far as possible in relation to the target cost, prior to construction.

NEC Contract Staged Approach – Review

There will be a review period prior to the construction stage, so as to allow the Council the opportunity to re-tender if for any reason the contractor's performance is unsatisfactory. Although the target cost is never a "fixed amount", it is at this stage that the target cost will be at its most accurate, prior to construction.

NEC Contract Staged Approach – Stage 2

During this stage the works are constructed and the final cost is determined at the end of the construction period.

TENDER DOCUMENTS

Using the NEC contract, the employer provides Contract Data Part 1 information, which for the purposes of this contract would include the following:

- Initial scheme drawings
- Performance specification
- Model activity schedule

At tendering stage, the initial scheme drawings would be based upon an initial design using all available information and in effect would be Angus Council's specimen design for the scheme prior to ECI; taking into account all known constraints. These drawings would include vertical and horizontal limits of deviation derived as a result of hydrological design and landowner consultations.

The performance specification would provide the tenderer with a list of design and construction constraints arrived at both before and during the consultation period. Only relevant and justifiable constraints will be included in the performance specification so as not to stifle innovation during tender preparation.

An indication of the acceptable target cost will be included in the contract documents. This will be prepared by giving careful consideration to pre-tender cost estimates, contingency allowances, fee summaries, central funding allocations, Roads Department financial plan allocations etc. The purpose of this figure is to inform the tenderer's decision as to how to consider quality/cost components of their proposed scheme during tender preparation, and also minimise the probability of the project running over budget.

In response to the employer's Contract Data Part 1, the contractor provides Contract Data Part 2 information, which for the purposes of this contract would include the following:

Proposed Scheme Drawings

Any amendments / alterations to the initial design are to be highlighted and made explicit for tender evaluation.

Activity Schedule

This is in effect a breakdown of how the target cost was arrived at, alongside the proposed methods of construction etc.

The level of information to be provided at tender can be set by the employer during the preparation of the tender documents.

Target Cost

This is prepared by the tenderer in response to the Contract Data part 1 taking into account any proposed revisions allowing cost savings in relation to the initial scheme drawings

QUALITY/PRICE TENDER EVALUATION

At tender evaluation, the benefits to the design, construction and maintenance of each proposal will be considered in terms of a quality and cost assessment. Those elements of the scheme design considered to not conform to the performance specification will be marked down heavily for quality, allowing the employer to exclude those tenderers submitting designs outwith the performance specification. Other clauses will allow the employer discretion to exclude tenderers with a high cost score that may outweigh a poor quality score providing an overall score which would win the contract. In addition a minimum quality threshold will be imposed for all tenderers to achieve or risk voiding their submission. A point scoring system will then be used to score both quality and cost factors providing a tender score and an open auditable trail.

TENDER / INITIAL TARGET COST

The contractor prepares the Tender Target Cost for the purposes of tender evaluation only. Upon award, those elements of the proposed scheme drawings unacceptable to Angus Council will not be included in the Contract Data Part 1, and the Tender Target Cost will be revised accordingly in accordance with the activity schedule cost breakdown to provide an Initial Target Cost for stage 2 award.

CHANGES TO TARGET COST

A change to the Initial Target Cost can be made only by way of a compensation event as agreed by both parties, this in effect is similar to what would be termed a "variation" under ICE 5th Edition forms of contract. Should the contractor seek to increase the target cost and hence his profit element, he can only do this through the normal reasons for initiating a compensation event. Any change to the Contract Data Part 1 would constitute a compensation event under standard NEC conditions. Therefore should the performance specification change in any way during the contract period, the target cost will change to reflect this accordingly.

MONTHLY PAYMENTS, ATTRIBUTABLE RISKS & FINAL COST

Each month the contractor must demonstrate the actual cost of the works before payment can be made. This actual cost includes for all risks attributable to Angus Council, and excludes all risk attributable to the contractor as set out in the risk register and contract conditions. This series of monthly payments made on an actual cost basis will be summed up at the end of the contract to form the "final cost".

SHARING SAVINGS AND INCREASES

Should the contractor determine quicker and cheaper methods of constructing the works within the performance specification, this will result in a decrease in final cost. Both the employer and the contractor will share the savings between the final cost and target cost. Conversely, should the contractor determine that slower and more expensive methods of constructing the works are required in order to meet the performance specification than originally envisaged, thus resulting in a final cost in excess of the target cost, then the contract can be set up so that the contractor bears the majority share of the cost increases. The percentage share allocation of savings and increases will be set in liaison with the risk register workshops (see below) so as to incentivise the contractor to make savings.

RISK ALLOCATION POLICY

A risk register will be prepared in liaison with the Directors of Law and Administration, the Acting Director of Finance, the Director of Planning and Transport and the project team.

The risk allocation process will:-

1. Determine NEC contract standard risk allocations.
2. Hold risk register meeting(s) to determine amendments required to NEC standard approach.
3. Identify those risks which are "firm" contractor risks for inclusion in the contract documents.
4. Identify those risks identified as being "shared" contractor/AC risks – insert into contract data part 1 – thus allowing them to be amended during the contract period by way of compensation events.
5. Prepare risk cost assessment and review budget allocation.
6. Include copy of risk register with documents to aid tendering process.
7. Review risk register and costed risk assessment on a regular basis throughout the duration of the project.
8. Determine a scale of sharing costs (savings and over-runs) which emphasises the benefit of savings for the contractor e.g:

<i>Share range(as a Percentage of Target Cost)</i>				<i>Contractor's Share percentage</i>
Less than	80%			90%
From	80%	to	90%	70%
From	90%	to	110%	50%
From	110%	to	120%	70%
Greater than	120%			90%

Example 1 – Minimal Cost Difference

Target cost (TC) = £4.5 million

Actual cost (AC) = £4.3 million

Share Range = $AC/TC \times 100 = 95\%$

Contractor share percentage = 50% = £100,000

Angus Council share percentage = 50% = £100,000

Example 2 – Large Cost Increase

Target cost (TC) = £4.5 million

Actual cost (AC) = £5.3 million
Share Range = $AC/TC \times 100 = 118\%$

Contractor share percentage = 70% = £560,000
Angus Council share percentage = 30% = £240,000

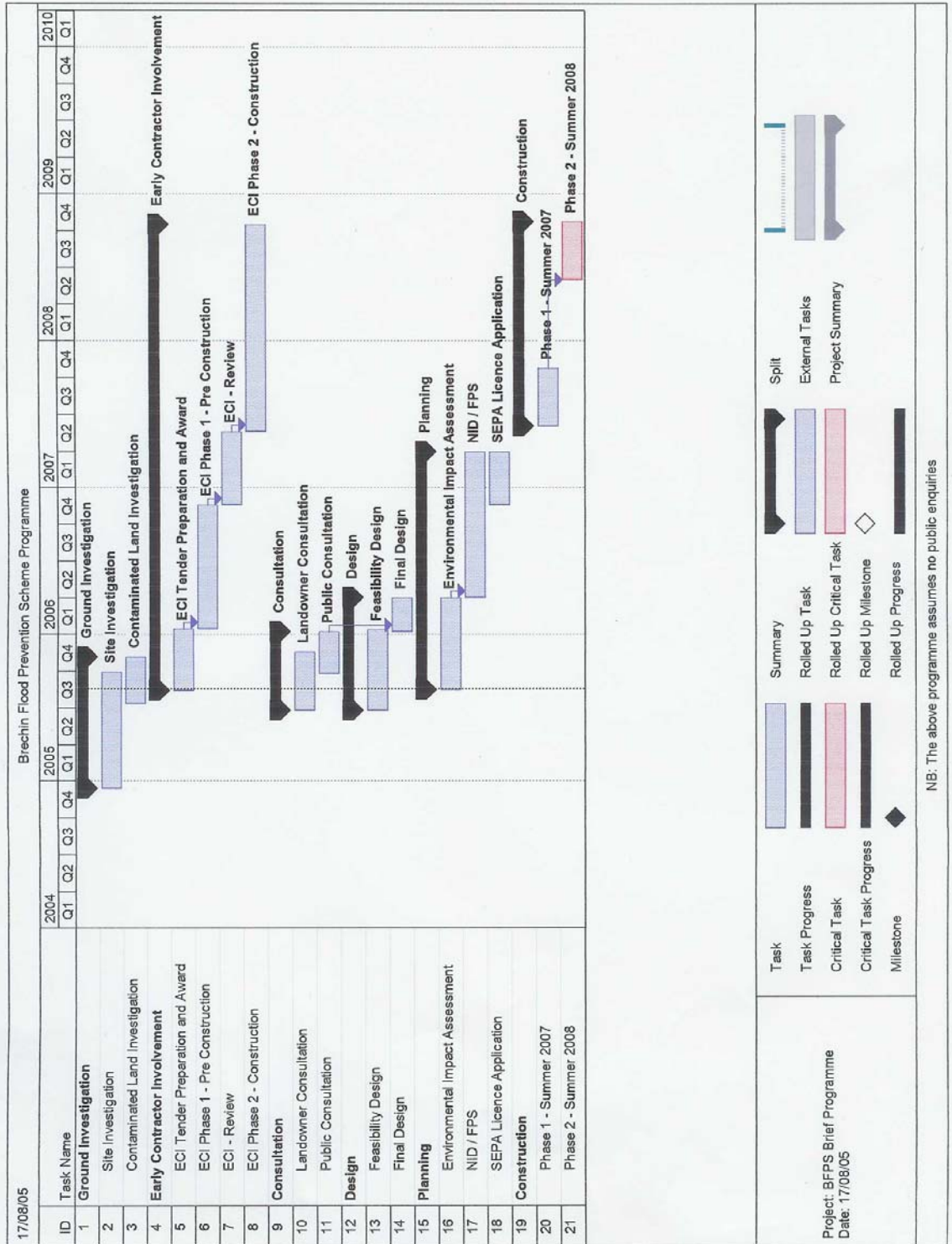
Example 3 – Large Cost Saving

Target cost (TC) = £4.5 million
Actual cost (AC) = £3.7 million
Share Range = $AC/TC \times 100 = 82\%$

Contractor share percentage = 70% = £560,000
Angus Council share percentage = 30% = £240,000

Therefore the share percentages can be set so as to incentivise the contractor to bear the majority of increased costs and savings, whilst retaining a degree of certainty as to the Council's liability.

**ANGUS COUNCIL
ROADS DEPARTMENT
BRECHIN FLOOD PREVENTION SCHEME**



**ANGUS COUNCIL
ROADS DEPARTMENT
BRECHIN FLOOD PREVENTION SCHEME**

DSS/RWM/DD/PP 19 03 00

6 July 2005

Jon Hargreaves
Chief Executive
Scottish Water
Castle House
6 Castle Drive
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DUNFERMLINE
Fife KY11 8GG

Dear Mr Hargreaves

BRECHIN FLOOD PREVENTION SCHEME – SCOTTISH WATER PLANT UPGRADE FUNDING

With regard to the above scheme I write further to previous meetings and correspondence over that past two and a half years between representatives of Angus Council Roads Department and Scottish Water (notably Helen Cargill, Kevin Moran and Steve Raith).

The scheme is now nearing the final design stage, with landowner and public consultation now underway prior to proceeding with the statutory planning and Scottish Executive approval. Unfortunately there is currently a lack of clarity with regard to Scottish Water funding for the necessary infrastructure upgrades required to your waste water treatment and disposal facilities in the area to prevent backing up of existing storm water and sewer outlets into the River South Esk at Brechin once the proposed flood defences are in place.

Once in place the proposed defences will provide protection from a 1 in 200 year flood event to those areas of Brechin prone to and at risk of flooding, whilst also serving to protect your pumping station at Leuchland Den, Brechin. However without the necessary anti-flooding measures necessary for the effective operation of waste water treatment and disposal during high river flows, the proposed flood defences will act as a dam for waste water rather than a barrier against flood water from the river.

The current programme has an anticipated construction start date of Spring 2007, with completion in autumn of 2009. The Scottish Executive have confirmed that they will not fund directly the upgrading of sewerage and storm water plant, and that the funding for the proposed flood prevention scheme would not be forthcoming unless Scottish Water funding for the necessary plant upgrades is in place.

I would therefore be very much obliged if you would confirm whether or not Scottish Water intends to allocate funds for the necessary plant upgrades, and if this funding will be allocated to fit the proposed construction dates for the flood prevention scheme.

If you have any further queries regarding the above please contact the Director of Roads, Ronnie McNeil on 01307 473276.

Yours sincerely



David S Sawers
Chief Executive