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Construction Sector Transparency Initiative (CoST)

Assurance Team Report

Cobbins Brook Flood Alleviation Scheme, the Environment Agency

September 2010

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Acknowledgements

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1. Summary

1.1.1 Construction Sector Transparency Initiative (CoST) is an international multi-stakeholder programme designed to increase the accountability of public sector organisations and construction companies for their construction projects. It will do this by disclosing information at all stages of the construction project cycle, from the initial identification of the project to the final completion. The Environment Agency Cobbins Brook flood alleviation scheme is one of the chosen projects that form part of the UK Pilot.

1.1.2 The assurance team appointed by the UK Multi-Stakeholder Group for this pilot study comprises four senior construction industry specialists, working together to obtain and assess information and provide reports.

1.1.3 The Environment Agency has constructed the Cobbins Brook flood alleviation scheme to provide relief from flooding at Waltham Abbey. The decision to construct this scheme followed a detailed assessment of options, including costs and benefits.

1.1.4 The Environment Agency operates procedures for the control of cost, management of the programme of work and monitoring of quality. They have made full and accurate disclosure of documents demonstrating their procedures for awarding contracts for this project and in operating their procedures.

1.1.5 The consultants and contractors required for this project are selected from a framework of available suppliers, generally following the submission of competitive tenders. The consultant prepares designs to meet the Environment Agency requirements. The contractor is used to seek design improvements after appointment and before commencing construction, and to construct a finally agreed scheme. This approach is likely to provide good value for money.

1.1.6 A two stage process was used for the appointment of the contractor. Following the award of contract but before start of construction was instructed, a review of design was carried out by the contractor to identify potential changes, and adjustments were made to the price and programme for these changes. This approach has the benefit of getting the contractor's detailed input to the design, and the use of an experienced cost consultant to analyse proposed price changes provides reassurance that the revised contract price is appropriate.

1.1.7 Contracts with consultants and contractors are based on the NEC suite of standard contract documents in common use in the construction industry. Proper management of the contract in accordance with the form of contract used and Environment Agency procedures is critical to the success of the project. Programme, quality and cost are generally managed by the Environment Agency in accordance with the requirements of these contracts and their own procedures.

1.1.8 During construction, the Environment Agency motivates the consultant and contractor to control costs within the available Environment Agency budget by sharing savings and overruns on the budget with them. This approach is a useful way of controlling costs on such contracts. To ensure that the contractor and consultant have sufficiently challenging targets, the number of items which could give rise to a change to this budget during the construction stage was limited.

1.1.9 The quality of the completed scheme is managed by carrying out an initial study of options, the use of experienced consultants for design, reviews of design before progressing through defined stages of work, the operation of quality management systems during design and construction stages, and direct supervision of construction. These actions were carried out satisfactorily on the Cobbins Brook scheme; however, a formal record of the operation of the quality management system and of the supervision would increase confidence in the completed project.

2. Introduction

2.1 Background

2.1.1 The Construction Sector Transparency Initiative (CoST) is an international multi-stakeholder programme designed to increase the accountability of public sector organisations and construction companies for their construction projects. It will do this by disclosing information at all stages of the construction project cycle, from the initial identification of the project to the final completion.

2.1.2 It is, however, recognised that the disclosure of this information may not be sufficient on its own to achieve greater accountability. This is because some of the information is likely to be complex and not easily intelligible to the general public. For example, there are many reasons for time and cost overruns on construction projects. To ensure that the information that is released is both accurate and available in a form that can easily be understood by stakeholders it is verified and interpreted by experts appointed for this purpose -- the assurance team.

2.1.3 Eight projects have been identified by the UK Multi-Stakeholder Group (MSG) to form a pilot study of operation of this initiative, in the UK. The MSG has divided the 'CoST projects' into two groups of 4 projects referred to as Group A and Group B. The Cobbins Brook flood alleviation scheme is one of the chosen Group B projects.

2.1.4 The Institution of Civil Engineers (ICE) is managing the pilot on behalf of the MSG. The MSG directs the implementation of the UK pilot. It consists of representatives from government, the private sector and civil society.

2.1.5 The assurance team appointed by the MSG for this pilot study comprises four senior construction industry specialists, working together to obtain and assess information and provide reports. This report has been prepared by Peter Higgins, the team member who carried out the Cobbins Brook information review.

2.1.6 We have included at Appendix 1 a glossary of terms used in the report where they have a particular technical meaning in relation to construction.

2.2 Objectives of the pilot study

2.2.1 The UK pilot has four objectives:

- to learn lessons to help in the development of CoST
- to learn lessons on improving transparency through the disclosure of project information
- to gain an improved understanding of construction project costs amongst public sector clients
- to learn and share lessons on the management and control of publicly-funded construction projects.

2.2.2 The assurance team has been appointed to carry out the following tasks:

- collect the project information
- verify the accuracy and completeness of the information
- report on the extent and accuracy of the information which has been released
- on Group B projects only, analyse the information and make informed judgements about the cost and quality of the project
- on Group B projects only, report on the findings regarding the cost and quality of the project and highlighting any outstanding questions.

2.3 Work carried out on the pilot study

2.3.1 Initially, we held a meeting with the Environment Agency's project manager for the scheme to explain the objectives and procedures for this pilot study. Subsequently, we held a workshop with members of the project team to explain what information was needed and how it would be used.

2.3.2 The International Secretariat had prepared a standard list of material project information to be disclosed on all pilot projects, and we adapted this into a schedule to suit this contract. The International Secretariat had also prepared two lists of disclosures the first list of disclosures would be requested for both Group A and Group B projects; a second list of further disclosures could be requested for Group B projects. The further disclosures would depend on the information that was required to meet the additional Group B objectives. We provided a copy of the applicable schedule to project team members. At the workshop, we identified the information which they held and which was needed to provide the information on the schedule. Jointly with the project team, we reviewed how this information could best be produced to minimise additional work for them.

2.3.3 We assisted the ICE in setting up a computerised data store to receive and store this information, and in establishing the arrangements for providing access to the data store. At the workshop with the project team, we explained how this data store would operate and how access to information and other material would be controlled. We explained how the disclosed information would be used, and what access team members would have to review and comment on reports before publication.

2.3.4 The Environment Agency provided the documents by electronic transfer to the data store. Following our review of the information initially provided, the Environment Agency provided further documents we had identified as necessary.

2.3.5 We reviewed the information disclosed, and held further meetings with the project team to clarify certain matters, verify the accuracy and completeness of information, and to obtain further understanding of how the project was managed.

2.3.6 The schedule of material project information which the Environment Agency was expected to disclose under the pilot study is set out in Appendix 2. We have completed the schedule by identifying the information required.

2.3.7 A detailed schedule of the documents disclosed, with a description of their purpose, is included at Appendix 3.

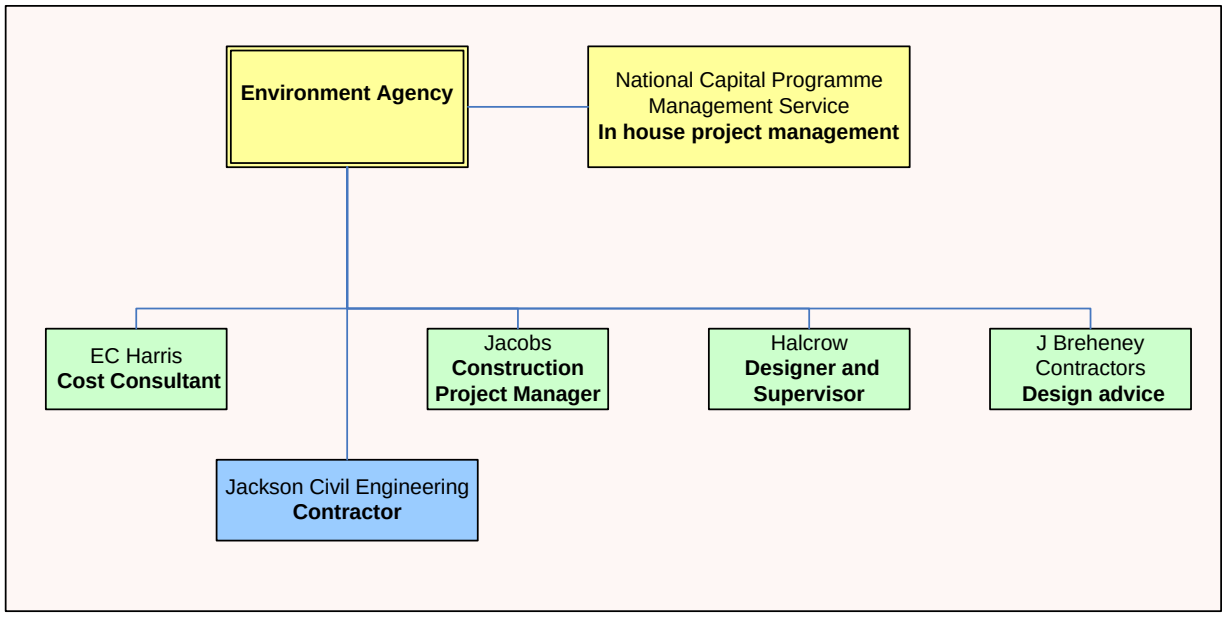
2.3.8 The documents disclosed fall into the following categories.

- General material describing the need for a flood alleviation scheme, identifying the costs and benefits of various options, and gaining agreement to the funding and programme the scheme.
- Documents dealing with the appointment of Halcrow and the management of their design and supervision contract.
- Documents dealing with the appointment of Jacobs for project management services, and the management of their contract.
- Documents dealing with the selection and appointment of Jackson Civil Engineering and the management of their contract.
- Documents relating to the monitoring and control of costs on the project.

2.4 The Cobbins Brook project

2.4.1 The Cobbins Brook project is an Environment Agency scheme aimed at alleviating flooding in the town of Waltham Abbey. The project involves constructing an embankment across a shallow valley some 2 kilometres upstream from the town, formed from material excavated from within the valley to create storage areas to contain the floodwater. A culvert passes through the embankment to carry the Cobbins Brook and a gate system is provided to control the flow of water as necessary. The objective of the scheme is to hold back flood water in times of high flow in order to reduce the level of water in the stream through Waltham Abbey.

2.4.2 The organisations involved in the project, and their relationship with the Environment Agency, are shown in the following diagram.



2.4.3 Overall management of the project was undertaken by the Environment Agency's specialist, in house, project management service, National Capital Programme Management Service. The Environment Agency has appointed consultants and contractors to design, manage and carry out construction work.

2.4.4 The initial study work was carried out by Halcrow Group, a firm of consultants with specialist skills in water projects. Halcrow was subsequently appointed to carry out a detailed design and supervise the quality of the construction project. Advice on costing of the scheme was provided by EC Harris, a firm of quantity surveyors. The contract required a project manager to be identified who would take decisions and assess payments and the like during the construction stage. This service was provided by a project management specialist from Jacobs, a firm of engineering consultants.

2.4.5 During the initial design stage, advice on construction related issues was provided by J Breheny Contractors, a construction company, and construction of the scheme was carried out by Jackson Civil Engineering.

3. Validation and analysis of documents

3.1 Environment Agency procedures

3.1.1 It is necessary to set out the Environment Agency's procedures for awarding and managing contracts in order to understand the status of documents disclosed by them.

3.1.2 Most of the Environment Agency's work -- and all the work on the design and construction of the Cobbins Brook contract -- is awarded to consultants and contractors on their framework panels.

3.1.3 A framework is a selected list of suppliers (consultants or contractors) who will carry out work of a specified nature when instructed by the Environment Agency. To set up a framework, the Environment Agency invites submissions from companies who wish to be selected and who are judged to be capable of carrying out the work. Submissions are marked by the Environment Agency and those scoring the highest are appointed to the framework. The framework agreement will last for a period of time -- typically four years -- following which a replacement framework agreement is set up and fresh submissions are sought and marked as before.

3.1.4 The first stage in a construction project is the preparation of a "Project Appraisal Report" to identify the need for the project and obtain internal authorisation of the necessary funds. If further funds are later required, authorisation is sought and obtained by using the Environment Agency's "Form G".

3.1.5 Following approval of the Project Appraisal Report and agreement to proceed with the project, the Environment Agency selects suppliers for the work. This is normally done by obtaining competitive tenders from suppliers selected from the framework, and awarding the work to the supplier offering the best proposal.

3.1.6 For major contracts, a "Contract Award Report" is prepared setting out the basis of the selection of the supplier and seeking authorisation to award the contract.

3.1.7 Award of a contract is normally made using a "Contract Instruction". This is a formal document recording details of the contract and providing approval to the commitment. Other documents will also be significant in identifying the details of the contract. The specification -- the "Scope" or "Works Information" sets out the technical detail of what the supplier is required to do. The "Contract Data" identifies the specific contract clauses which will apply.

3.1.8 For major construction work, the Environment Agency's normal approach to the appointment of contractors is to utilise a two-stage procedure. The contractor is chosen using a tender selection procedure where tenderers submit price and quality proposals for the work, based on a draft design prepared by the Environment Agency's consultant. In the first stage, the successful contractor is appointed to work closely with the Environment Agency's consultants to develop the design sufficiently for the price and construction details to be confirmed. The contractor identifies any changes to the price, which are verified and adjusted as necessary by a cost consultant. The second stage, of construction, starts once the price and any other issues had been agreed, and final internal Environment Agency authorisation to start construction has been obtained.

3.1.9 Most Environment Agency work is carried out using the NEC forms of contract -- standard model forms for construction and for design work used widely for construction projects in the public sector. Under these contracts, where a change would have an effect on either the date of completion of the work or the cost of the work, a "compensation event" procedure is followed to obtain changes to prices and programme.

3.1.10 The Environment Agency uses a "target price" basis for payment on major contracts. Under this arrangement, the supplier is paid the cost of the work carried out, and then shares in the savings or cost overruns if this is less or greater than the tendered price for the work. On many projects -- including the Cobbins Brook project -- this approach is extended to cover all the costs within the Environment Agency's budget for the project. In this event, the share of savings or cost overruns are not simply calculated from the supplier's own costs, but from all costs incurred by the Environment Agency on the project. These include the Environment Agency's internal costs and the cost of their consultants, the cost of utility diversions and connections and the costs of land acquisition.

3.1.11 This provides a strong incentive for the contractor to take steps to minimise these costs, as he would have to contribute to any overspend but would gain from any savings. The Contractor's share of any savings or overruns was restricted, to avoid excessive profits for the contractor or the need for an excessive risk premium being added to the prices.

3.2 Project identification and budget

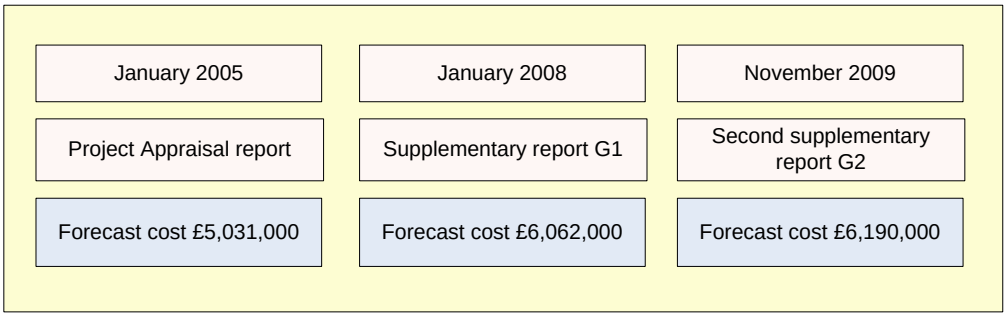
3.2.1 A Project Appraisal Report for the Cobbins Brook project was prepared by the Environment Agency and dated January 2004. We believe the date of this report is actually January 2005, as it follows an update on the December 2004 draft. This report analysed the flooding problem at Waltham Abbey, identified the options available for dealing with this problem, considered the costs and benefits of each option and made recommendations for a flood alleviation scheme.

3.2.2 A cost estimate report was prepared by EC Harris in November 2004 and updated in December 2004, setting out the projected construction cost for the project. The Environment Agency had requested the contractor assisting in the development of the design, J Breheny Contractors, to estimate the construction costs and the EC Harris report commented on this estimate and recommended some adjustments. The amount recommended by EC Harris was adopted in the initial Project Appraisal Report of January 2005.

3.2.3 The Project Appraisal Report forecast the total cost for the project of £5,031, 000, based on construction taking place between May 2007 and March 2008.

3.2.4 A supplementary report -- Form G1 -- was prepared in January 2008. This saw an increase in funding to cover costs arising from additional land acquisition, increases in cost resulting from a two-year delay to the construction of the project and design modifications. The cost increase was £1,031,000, resulting in a revised budget of £6,062.000.

3.2.5 A second supplementary report -- Form G2 -- was prepared in November 2009 to seek a further increase in the budget to £6,190,000 resulting from a number of minor changes during the construction stage of the contract and increases in legal costs related to land issues. It also included the cost of employing a project manager for the construction stage which had been omitted from the estimates prepared previously.



3.2.6 We have been provided with copies of the reports, together with copies of the internal authorisation, with signatures, permitting the project to proceed and authorising the release of funds for the project.

3.2.7 Having considered the documents disclosed by the Environment Agency in light of their procedures, and having also compared the costs requested with those recorded for the various consultancy and construction contracts, we are satisfied that these documents adequately identify the project and the funding for the project.

3.3 Approach to awarding contracts

3.3.1 Frameworks are frequently used by major organisations as they also allow efficiencies to be gained through an improved understanding by the contractor or consultant of the employer's objectives and approach to his programme of work. They also reduce the delays and tendering costs which would result from competitive tendering.

3.3.2 We consider that the selection of suppliers from a framework for consultancy and construction services is an effective and efficient way of providing good value for money and potential time savings. By seeking tenders from several suppliers from a framework, the Environment Agency retains the benefit of competition to identify the best supplier for the contract.

3.3.3 The designer for this contract, Halcrow, was appointed from the framework of consultant without competition. Under the current framework arrangements, competitive tenders would normally be obtained (as was the case with the project manager, Jacobs), but at the time of Halcrow's appointment this was not normally the case. Under the framework operating at the time, the Environment Agency relied on the competitive element of tendering for the framework, and benchmarking of costs for individual contracts. The selection of the consultant for a specific task was based on an assessment of suitability for the work in question.

3.3.4 Because of the specific knowledge of the scheme held by Halcrow, and taking account of the Environment Agency's other checks on pricing, it is unlikely that they would have received better value by appointing another consultant. However, by applying some form of competition between consultants – as in the current framework – greater transparency is obtained.

3.3.5 The Environment Agency operates a two stage process for appointing contractors for major construction work. Following competitive tenders for the work, the selected contractor is appointed to assist in the completion of the design and to prepare a final target price for construction.

3.3.6 Careful control must be kept of the process for deciding the target price. It would be wrong to allow a contractor to improve their position by renegotiating the price after contract award. To avoid this pitfall, the Environment Agency employs experienced cost consultants to

advise them on any amendment to the target. In the case of Cobbins Brook, this service was provided by EC Harris, who confirmed the appropriate change to the target.

3.4 Incentive bonus arrangements

3.4.1 Both Halcrow and Jackson had incentive payments built into their contracts which would result in a bonus payment to them if the project was completed within the Environment Agency's incentive budget. The budget included all costs incurred by the Environment Agency from the start of the Cobbins Brook project.

3.4.2 The incentive budget was set at a figure lower than the full Environment Agency budget for the scheme, to allow some flexibility in case of significant unexpected problems. The incentive budget was fixed at time of tender for the construction contract, but could change if certain defined events which were entirely outside the control of Halcrow and Jackson occurred. It was not considered appropriate to transfer the risk to them as they could only be motivated to manage costs within the budget if they could in some way influence them.

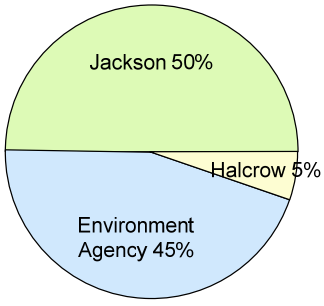
3.4.3 The employer's retained risks were

- major flooding
- major changes to the project scope
- changes in the law
- additional costs of statutory procedures
- programme or budgetary restraints by the Environment Agency.

The contract Project Manager (Jacobs), in consultation with the Environment Agency project manager, decides whether a compensation event is also an employer's retained risk.

3.4.4 Although the cost of the construction and the supervision contracts had increased, several of the employer's retained risks occurred, thus increasing the budget against which performance of the consultant and contractor was measured. The budget figure at the start of the construction stage was £6,062,000. This was increased during construction to £6,190,000 resulting from the retained risks. The "incentive payment budget" used for measuring the performance pf the consultant and contractor is lower than this, to provide a challenging target for the contractor and provide some flexibility for possible cost overruns.

3.4.5 At March 2010, the budget for incentive payment was £6,123,708. The projected saving on the "incentive payment budget" was £166,000, 50% of which would be shared with the contractor and 5% with the consultant. This is justified on the basis that the efforts of both had resulted in controlling costs to keep them within the Environment Agency's revised budget. The consultant's lower percentage reflects both the reduced opportunity to influence those costs and the significantly lower expenditure than Jackson during the construction stage.



3.4.6 The use of such incentive arrangements is a useful tool in controlling the effect of changes during the construction project. Although the contractor and consultant would be compensated by any changes that did happen during the construction contract, unless they fell within the restricted category of employer's retained risks, they would effectively have to contribute part of the cost themselves through losing their potential incentive bonus or make payment towards a cost overrun. Thus both employer and the consultant/contractor have a shared objective of minimising the cost of any changes that occur during the project.

3.4.7 The range of compensation events which affect this incentive target, whilst limited, leaves the Environment Agency with a risk of cost overruns. The Environment Agency includes risk allowances in its budget for these risks. By incentivising the contractor to achieve a lower budget, the Environment Agency retains some buffer against cost overruns from their retained risks.

3.5 Consultancy contract – Halcrow

3.5.1 The following documents have been provided in relation to the appointment of Halcrow for design and supervision work.

- Halcrow's proposals for the design and supervision of the Cobbins Brook project, dated April 2005, including a build up of their proposed cost.
- A contract instruction, dated 25 April 2005, instructing Halcrow to carry out the design and supervision, together with associated general consultancy work between 4 April 2005 and 31 March 2009. The basis of payment was time charge -- that is payment for the time spent on the project at the hourly rates agreed in the contract.
- Contract Data, which identified the contract terms for Halcrow's appointment of 25 April 2005.
- A second contract instruction, dated 7 November 2005, instructing Halcrow to carry out detailed design and site supervision of the Cobbins Brook contract, together with associated general consultancy work between 4 April 2005 and 31 March 2009.
- A third contract instruction, dated 1 August 2008, instructing Halcrow to carry out final construction design, preparatory environmental works, construction supervision and post construction landscape supervision between 1 August 2008 and 31 December 2015. The basis of payment was to be time charge with a share in a saving or overspend on the Environment Agency total budget for the project.
- Contract Data, which identified the contract terms for Halcrow's appointment 1 August 2008.
- A health and safety audit of the design stage conducted in June 2009.
- Details of compensation events resulting in increases in the cost of Halcrow's services.
- Environment Agency records showing costs to March 2010.

3.5.2 Halcrow's first appointment for this project was made under the April 2005 contract instruction in the sum of £447,531. A few months later, the Environment Agency appointed new suppliers to their framework contracts. Halcrow was successful in being appointed to this new framework, and it was decided that a contract for Cobbins Brook should be awarded to Halcrow under the new framework to cover the remaining work under the previous contract instruction.

3.5.3 Accordingly, the contract instruction of November 2005 in the sum of £297,565 was issued to cover the same work as the April instruction, but providing only for the work remaining to be carried out at that date (£149,966 had been expended by then on the design work). The overall budget allowance for their work remained at £447, 531.

3.5.4 A number of compensation events arose during the design stage. These totalled £183,258 and are summarised in Appendix 4. The effect of these compensation events was to increase the forecast cost of Halcrow's work to £630,789. A large part of this increase resulted from the delay to awarding the construction contract. Most other increases resulted from necessary design modifications.

3.5.5 A further, replacement contract instruction was issued in August 2008 with a target price of £201,424 to cover the work to be carried out during the construction stage. This was issued primarily to allow an incentive to be introduced into Halcrow's contract to motivate them to keep costs below the budget. The target was £81,889 higher than originally allowed for within the earlier forecasts, to provide for the additional requirements for supervision for the construction contract. The forecast cost of Halcrow's services was now £712,678.

3.5.6 Further compensation events arose during the construction stage and affected Halcrow's services. The agreed cost for these events is £43,767 as set out in Appendix 4. The effect of these compensation events was to increase the forecast cost of Halcrow's work to £756,445. The additional cost arose from the need to provide supervision services over a construction period extended by some four months longer than expected at the time the target was agreed. The remainder was for additional work in design and supervision which the Environment Agency concluded were not part of the consultant's original brief.

3.5.7 The following table sets out the development of Halcrow's budget for their work.

First contract instruction	£ 447,531	
Work before second instruction		£149,966
Value of second contract instruction		£297,565
Total		£447,531
Design stage compensation events	£ 183,258	
Sub total	£ 630,789	
Increased supervision cost	£ 81,889	
Sub total	£ 712,678	
Supervision stage compensation events	£ 43,767	
Total	£ 756,445	

3.5.8 During the design stage, Halcrow's programme was controlled by Environment Agency decisions on funding and on stated procedures relating to land. During the supervision stage, their programme was controlled by that of the contractor.

3.5.9 We are satisfied that the documents disclosed fully and accurately describe the appointment of Halcrow for the design and supervision services on this contract.

3.5.10 Halcrow initially carried out work under an earlier appointment which included a feasibility study of possible work at Cobbins Brook and the preparation of the Project Appraisal Report. Whilst that contract is not reviewed as part of this pilot study, part of the costs incurred in that contract amounting to £360,000 has been allocated to the Cobbins Brook budget.

3.5.11 As a result of their earlier work, Halcrow were appointed to carry out detailed design and supervision work for the flood alleviation scheme at Cobbins Brook. No other consultants were approached, and comparative prices for the work were not obtained.

3.5.12 Using the same consultant for the preliminary work and subsequently for the detailed design and supervision is often employed in the construction industry. It has clear advantages, in that knowledge and understanding of the scheme are retained and the cost of the new consultant learning the history and proposals for the scheme is avoided. As a result, the employer is more likely to achieve a project which fully meets his objectives as the continuing consultant will have knowledge which would need to be learnt – with cost and delay consequences – by a replacement consultant.

3.5.13 This approach also has potential disadvantages, as it reduces the competitive tension that arises when seeking proposals from several suppliers. In this case, any alternative to Halcrow would be another consultant from the Environment Agency's framework. As long as the Environment Agency continues to monitor relative performance and costs of the consultants on their framework, the retention of the existing consultant for subsequent stages is unlikely to have any significant financial consequence.

3.5.14 A number of compensation events arose during the design work which increased the cost of Halcrow's services by £139,246.50. Details of these events are set out in appendix 4. These increased the forecast cost of Halcrow's services from £477,531 to £586,777.

3.5.15 The Environment Agency's method of dealing with cost changes through compensation events generally followed the contract requirements and provided a reasonable level of back up information to support their assessments. Timescales were not always met, particularly for major changes, but delays were introduced with the agreement of the contractor, rather than by disregarding the contract requirements. Some compensation events were assessed as the cost which had been incurred, due to the urgent nature of getting the work done, but where it was possible to get quotations in advance, the cost was agreed before work started.

3.5.16 The additional costs identified and compensated for are considered acceptable in a construction project where uncertainties can be expected to arise during construction. Better value for money is achieved by compensating for such risks as they arise rather than expecting the consultant to shoulder risks that are outside his control.

3.5.17 The consultant's programme was controlled firstly by Environment Agency procedures, and later by the contractor's progress. The documents indicate that Halcrow met the programme requirements for this project.

3.5.18 Halcrow's work was subject to a number of reviews for quality.

- The design was required to be carried out under the control of a quality management system complying with international standards for quality management.
- The Environment Agency project team maintained an overview of the project to satisfy them that it would meet their objectives.
- Detailed reviews were carried at fixed stages, where work could only progress if it could be demonstrated that the design was acceptable and the scheme was viable.
- Audits of design procedures were carried out to check that adequate quality management procedures were being operated by Halcrow.
- Assistance was provided by J. Breheney Contractors during the design development stage.
- The proposals were reviewed by Jackson Civil Engineering before work on site started to help identify any opportunities the savings or the need for any additional work.

- The design was reviewed by a specialist reservoir engineer, who was required to certify the adequacy of the design for the purpose of retaining water in flood conditions.

3.5.19 We believe the controls applied to the quality of the design were likely to minimise the likelihood of inadequacies in the design which could have resulted in difficulties during construction or over the operating life of this project.

3.6 Consultancy contract -- Jacobs

3.6.1 The following documents had been provided in relation to the appointment of Jacobs as the Project Manager for the construction contract.

- The scope of work for the appointment of the project manager.
- Tender evaluation of the submissions for the contract.
- A Contract Instruction, dated 19 March 2009, appointing Jacobs as project manager. The services were to be carried out between March 2009 and March 2010.
- Contract Data, which identifies the contract terms for Jacobs appointment 2009.

3.6.2 A project manager is needed to look after the Environment Agency's interests in the construction project. This person will oversee the construction work, and work closely with the contractor on programming, payment, risk management and control of any changes that arise. The role of project manager can be carried out from within the Environment Agency, by the consultant appointed for supervision, or by the use of a separate consultant. For the Cobbins Brook project, it was decided that an external appointment was required.

3.6.3 Six consultants from the Environment Agency's framework were invited to submit proposals for carrying out the role of project manager during the construction stage. The proposals were required to include both the price for the work and a quality statement describing the people involved and their approach to meeting the contract requirements.

3.6.4 Competitive tenders were submitted by four of the invited consultants, and were assessed by the Environment Agency in February 2009. The competition took the form of the assessment of prices for the proposed service and an assessment of the proposals as to how the service would be carried out. Jacobs had the highest score and were appointed as Project Manager by the Contract Instruction of 19 March 2009.

3.6.5 The contract between the Environment Agency and Jacobs was made on a time charge basis. This means the Jacobs were reimbursed for all the time expended on the project at fixed rates for people. As the amount of time needed to be expended by the Project Manager was clear, the risk of paying for time unnecessarily spent is minimal and readily managed. The currently forecast final cost is some £3000 higher than the price tendered, but this has resulted from the need to provide the services over a prolonged period of time due to delays in the construction project.

3.6.6 We are satisfied that the documents disclosed fully and accurately describe the basis of the appointment of Jacobs as Project Manager for the construction stage. Overall, we conclude that this appointment was a cost-effective way of obtaining the required services, and that adequate control of the cost of the service was provided.

3.7 Construction contract -- Jackson

3.7.1 The following documents have been provided in relation to the appointment of Jackson for the construction work.

- Specifications (Works Information) and other tender documents for the construction work.
- Jackson tender of 26 September 2008.
- Tender evaluation of October 2007 resulting in the recommendation of an award of the contract to Jackson.
- A contract instruction date 20 February 2009 instructing Jackson to carry out tree and hedge clearance and other advance works in February and March 2009.
- Contract award report dated 29 April 2009 confirming agreement of the target price.
- Copies of site data, including programme, compensation events, correspondence and payment certificates.
- Health and safety and environmental audit reports.
- Summary progress reports.
- Completion and handover review documents.

3.7.2 Initial design development was carried out with the advice of the contractor J Breheny Contractors, who also prepared a forecast price for the work. This was reviewed by the cost consultant EC Harris. As the Environment Agency's selected framework of contractors had changed by the time the price had been decided, and J Breheny Contractors were no longer included in the new framework, the Environment Agency concluded that they should appoint a different contractor from the new framework for the construction stage.

3.7.3 Three contractors from the Environment Agency framework were invited to submit tenders for the construction of this project. Tenders were to take the form of a target price for constructing the works together with a quality submission. The quality submission covered such matters as programme, methodology, resources, quality management and risk management.

3.7.4 The appointment of Jackson was made following a tender evaluation of submissions made by the three invited contractors. A score was given to the assessment of tenderers' proposed methodology and approach to constructing the flood defence scheme, which was combined with a score based on the price submitted by each tenderer in the rario 50:50 to give a total score. Jackson received the highest score and was thus awarded the contract at a target price of £2,393,557.

3.7.5 The approach to awarding contracts based on a combination of price and quality is common in construction projects. It provides some degree of balance between the tender price for a project and the quality of the service to be provided by the contractor. In this way, it reduces the likelihood of the contract being awarded at an unrealistic price, whilst retaining a substantial degree of competition between those seeking to be awarded the contract.

3.7.6 The basis of contract was that Jackson would be paid the cost they incurred in carrying out the work, but that in addition they would share in the savings or overspend incurred by the

Environment Agency on the entire budget of the project. This way, Jackson were motivated to keep their costs down in order to earn a bonus, but also to carry out the work in a way which minimised the likelihood of increases in costs incurred elsewhere by the Environment Agency. To this end, the Environment Agency budget for the work was fixed in the contract and could only be changed by a limited number of events.

Design changes

3.7.7 The design on which tenders were invited was an indicative design which had not been developed sufficiently to provide a fixed price for construction. Indeed, the approach followed by the Environment Agency was to involve the successful contractor in developing an efficient design. There would, therefore, need to be changes during the first phase of the contract whilst design was finalised.

3.7.8 Following the award of contract, the contract was delayed by land acquisition issues, during which time the Environment Agency, contractor and consultant carried out a joint review of the indicative design in order to complete the design to a stage where a firm price for construction could be established, This lead to a number of design changes which were agreed between the contractor and the Environment Agency's consultant. As a result, the price was amended to take account of these extra costs. This was done by establishing the likely cost of the additional work, and adding this to the original tender price. A firm of experienced cost consultants was used to assist in analysing the contractor's proposed cost changes and ensuring that realistic prices were agreed. The agreed target price for construction was £2,539,089.

3.7.9 The target was adjusted for four items.

- Increased inflation of approx 5% due to deferred construction time (£120K)
- Staff and subcontract works and associated Fee increase (£85K)
- Additional Works including double handling of earthworks and brick cladding of the wing walls (£180K)
- Advance works (£50K)
- Removal of steel sheet piles from the contract – to be purchased by the Environment Agency direct (£350k)

3.7.10 This increase was agreed by EC Harris as an appropriate allowance for items which were not required to be included in the previously tendered price. EC Harris carried out a further analysis of the total cost against the Environment Agency forecast and compared prices with those obtained on other contracts.

3.7.11 We conclude that the approach used in awarding the contract to Jackson and in using a cost consultant to advise on fixing the target price was likely to give the employment Environment Agency the best price for the work.

3.7.12 During the delay period, two interim contracts were awarded before work could start on the main project. J Breheny Contractors were instructed to carry out work (under a minor works framework) to provide infrastructure to deal with a great crested newt colony, and Jackson were awarded an interim contract to carry out the removal of trees and other advance works.

3.7.13 Following the agreement of the target price, and before work started on site, the target was increased by £35,000. This increase was to allow for the cost of the site clearance, which had been omitted from the target price in error.

3.7.14 During the progress of the works, 23 compensation events (events which could change the target price or the programme) arose from additional work requirements, not identified at the time the target price for construction was agreed. An increase of £137,227 was made to the target price and the completion date was set back by 137 days for these events. A schedule of these events is included at Appendix 5, which also provides a build-up for the cost changes resulting from the events.

3.7.15 The bulk of the additional cost was expended on subcontracted work. This is work that Jackson arranged with other specialist contractors to carry out on their behalf. In the majority of cases, prices were agreed in advance for the work as being a realistic forecast of the cost of the necessary work.

3.7.16 The documents produced in relation to the compensation events show that the procedures required by the contract for notifying and assessing events have been followed by Jackson and the Environment Agency, albeit that the timescales for making assessments have generally been extended beyond that expected by the contract. The value of the compensation events has been agreed, including in those cases where the project manager decided that Jackson's quotation included costs which were unnecessary for the additional work involved. In those cases, the project manager made his own assessment and notified Jackson of the result.

3.7.17 The consequence of these compensation events was to change the target price to £2,711,316.86. We understand that the cost of all these compensation events has been agreed, and that there are no outstanding events.

3.7.18 The following table sets out these changes to Jackson's target for construction.

Jackson initial tender	£	2,393,557
Changes agreed in setting target	£	145,532
Target price at start of construction	£	2,539,089
Addition for site clearance	£	35,000
Changes during construction	£	137,227
Final target price	£	2,711,316

3.7.19 The contractor provided regular programme updates throughout the project. Detailed programmes for the entire project were provided monthly, and short-term programmes showing work to be carried out over the next two weeks or so were provided weekly. As a result, the Environment Agency was able to monitor closely the progress of the works and to assess the impact of any changes as they arose.

3.7.20 In addition to cost changes, in two compensation events additional time was allowed for completion of the work. In one case, additional time was needed to make arrangements for changes to the power supply for the scheme, which took several weeks to resolve. In the other case, additional work was identified shortly before completion and which had to be done before completion.

3.7.21 The additional costs and time identified and compensated for are considered acceptable in a construction project where uncertainties can be expected to arise during construction. Better value for money is achieved by compensating for such risks as they arise rather than expecting the consultant to shoulder risks that are outside his control.

3.7.22 The contractor was required to manage the works using a quality management system. This is a method of working, following an international standard on quality management,

which is aimed at giving a greater level of assurance that the employer's requirements of the project will be met. In addition to this, quality of the work was monitored by Halcrow, who carried out inspections of the work and of the contractor's quality management system. Audits were carried out on the contractor's quality management system, the health and safety performance and their environmental management.

3.7.23 We are satisfied that the documents disclosed fully and accurately described the appointment of Jackson for the construction work. The documents provided demonstrate that the construction works were carried out in accordance with good practice, and could be expected to provide value for money.

3.8 Other contracts

3.8.1 Documents have been disclosed identifying further costs incurred on the project in relation to the following.

- Costs of staff involved in the management of the project, including staff seconded into the Environment Agency to assist -- approximately £350,000.
- Cost consultant EC Harris -- approximately £70,000.
- Legal and compensation costs in relation to land -- approximately £1.2 million.
- Surveys and site investigation -- approximately £70,000.

3.8.2 We have not carried out further investigation of these contracts.

3.9 Project outturn costs.

3.9.1 Several documents have been provided to establish payments made and forecast future costs to completion of the project.

- A spreadsheet prepared in March 2010 identifying costs incurred to date and projected future costs on the project until 2015. These costs are broken down between the various costs incurred -- the costs against each consultant and contractor are identified separately.
- A second spreadsheet setting out the calculation of target share gain/pain for Halcrow and Jackson.
- A schedule of risks on the contract, identifying appropriate allowances to be made for potential future costs for each risk. This spreadsheet has been used throughout the construction stage of the project to monitor risk contingencies.

3.9.2 The most recent risk schedule of November 2009 shows a risk allowance for the remaining work of £38,000. We have been advised by the Environment Agency that at a project meeting in March 2010, it was agreed that the major risks had passed and that the risk allowance could be reduced to £10,000.

3.9.3 We have been able to reconcile the figures on these cost spreadsheets and have produced a summary of costs in appendix 6. This shows the approved expenditure from the original Project Appraisal Report and subsequent Forms G1 & G2. It also shows the forecast as at March 2010 of total costs likely to be incurred to completion.

3.9.4 The costs in the table demonstrate that there has been some movement in cost between categories, but the overall cost falls within the approved budget. By using this forecasting tool, the likely final outturn cost has been kept under observation and additional funding has been sought through the Environment Agency Form G system when it was seen that the existing budget was likely to be exceeded.

3.9.5 The forecast final cost of this project is projected at £5,958,000; a saving on the budget of £232,000. There will, however, be further payments made for Halcrow and Jackson's share of this saving.

3.9.6 The Environment Agency records of costs indicate that the expenditure on the project to end of March 2010 of approximately £5,791,000. There remains, therefore, a forecast future expenditure of £167,000. This cost mainly covers the aftercare of landscaping work over the remaining 5-year care period, and the review of the embankment performance as a water retaining structure. We consider that, with such comparatively small amounts of future payments, the forecast can be accepted as reasonably accurate.

3.9.7 We have discussed the disclosed documents with the Environment Agency's project manager, and are satisfied that full and accurate disclosure of the likely outturn costs has been made.

Appendices

1. Glossary
2. Material Project Information
3. Schedule of documents disclosed
4. Schedule of contract changes -- Halcrow contract
5. Schedule of contract changes -- Jackson contract
6. Table of cost forecasts and budgets

Appendix 1: Glossary

Accountability: CoST's aim is to enhance the accountability of procuring bodies and construction companies for the cost and quality of public-sector construction projects. The core accountability concept is to 'get what you pay for'. The 'you' in this context applies equally to national governments, affected stakeholders and to the wider public.

Audit: A review of procedures to establish whether work has been carried out as anticipated.

Benchmarking: Comparison of performance against other organisations or providers of similar services, particularly those recognised as undertaking best practice.

Budget: An amount of money allocated to a project or scheme

Compensation event: An event at the risk of the Employer, which may change the programme or price for the project if it occurs.

Competitive Tendering: Awarding contracts by the process of seeking competing bids from more than one contractor.

Computerised data store: A centrally located computer on which information is stored and made available to those who have been given access to it.

Construction Sector Transparency (CoST) Initiative: An international multi-stakeholder initiative designed to increase transparency and accountability in the construction sector.

Consultant: An organisation or individual who has made a contract to provide services.

Contract: A binding agreement made between two or more parties, which is intended to be legally enforceable.

Contract Documents: Documents incorporated in the enforceable agreement between the Procuring Entity and the contractor, including contract conditions, specification, pricing document, form of tender and the successful tenderers' responses (including method statements), and other relevant documents expressed to be contract documents (such as correspondence, etc.)

Contractor: An organisation or individual who has made a contract to undertake works, supply goods or provide services.

Contract period: An arrangement for the supply of works, goods or services established for a fixed period of time.

Cost estimate: A cost estimate prepared by the buyer of works, goods or services which provides a benchmark or a basis for evaluation and/or negotiation when tenders/offers are received from tenderers. It also serves as an instrument of project planning and budgeting.

Employer: In the context of the CoST initiative, the Procuring Entity awarding construction and consultancy contracts for the project.

Feasibility study: An evaluation of a proposed project to determine the difficulty and likely success and benefits of implementing the project.

Framework Agreement: An arrangement under which a Procuring Entity establishes with a provider of goods, works or services, the terms under which contracts subsequently can be entered into or called off (within the limits of the agreement when particular needs arise).

Material Project Information (MPI): MPI in this context is intended to indicate that information disclosed on a project is sufficient to enable stakeholders to make informed judgements about the cost and quality of the infrastructure concerned.

Offer: An offer can be the positive answer issued by a tenderer in response to a tender invitation, or an announcement to deliver goods, carry out works and/or services to every or a specific buyer without a specific request or invitation to tender. Also refers to an expression of readiness by a tenderer to enter into a contract.

Procurement: The process of acquiring goods, works and services, covering acquisition from third parties and from in-house providers. The process spans the whole life cycle from identification of needs, through to the end of a services contract or the end of the useful life of an asset.

Procuring Entities (PEs – also referred as clients and contracting authorities): The State, regional or local authorities, bodies governed by public law or associations formed by one or several of such authorities that procure works, goods and services with full or part public funding.

Programme: The projected timing of activities required under the contract.

Quality Management System: Procedures and practices for controlling the quality of the work carried out.

Quotation: A proposed price and programme for work.

Supervision contract: A contract with a consultant to oversee the performance of the contractor on the construction work, to give a level of reassurance to the Employer about the quality of the work.

Specification: Is an essential part of the design, and states how the work should be executed to ensure that it meets the designer's assumptions.

Tender: An official written offer to an invitation that contains a cost proposal to perform the works, services or supplies required, and is provided in response to a tendering exercise. This normally involves the submission of the offer in a sealed envelope to a specified address by a specified time and date.

Tender Documents: Documents provided to prospective tenderers when they are invited to tender and that form the basis on which tenders are submitted, including instructions to tenderers, contract conditions, specification, pricing document, form of tender and tenderers responses.

Tender Evaluation: Detailed assessment and comparison of contractor, supplier or service provider offers, against lowest cost or most economically advantageous (cost and quality based) criteria.

Transparency: In the context of the CoST initiative transparency relates to the disclosure of material project information on construction projects.

Value for Money: The optimum combination of whole-life cost and quality to meet the PEs and user's requirement.

Appendix 2 – Material Project Information

Stage of project cycle	List of MPI to be disclosed	Project name: Cobbins Brook Procuring Entity Environment Agency
Project identification	Project purpose	To reduce the risk of flooding to property within Waltham Abbey, infrastructure & designated sites
	Location	Waltham Abbey, Essex
	Intended Beneficiaries	466 properties at risk of flooding from 1 in 200 year event
	Specification	Construction of embankment and channelling of existing Cobbins Brook with culvert under embankment
Funding	Budget	£5,031,000 set in January 2004, increased to £6,062,000 in December 2007, and further increased to £6,190,000 in November 2009
	QS's estimate	£2,445,417 for construction set out in EC Harris cost estimate of November and December 2004
Tender process (project supervision)	Tender procedure	Halcrow appointed for design and supervision following their previous work on the feasibility study
	Name of main consultant	Halcrow Group
Tender process (project management)	Tender procedure	Competition on price and quality between framework consultants
	Number expressing interest	6
	Number shortlisted	6
	Number submitting tender	4
Tender process (main contract for works)	Tender procedure	Mini competition between framework contractors
	Number expressing interest	3 selected from framework
	List of tenderers	Birse, Morrison, Jackson
	Number shortlisted	3
	Number submitting tender	3
Contract award (project supervision)	Name of main consultant	Halcrow Group Ltd
	Contract price	£201,424.57
	Contract scope of work	Set out in Contract Data and Halcrow submission document
	Contract programme	August 2008 – December 2015
Contract award (project management)	Name of main consultant	Jacobs
	Contract price	£57,300

Stage of project cycle	List of MPI to be disclosed	Project name: Cobbins Brook Procuring Entity Environment Agency
	Contract scope of work	Set out in Contract Data
	Contract programme	March 2009 – March 2010
Contract award (main contract for works)	Name of main contractor	Jackson Civil Engineering
	Contract price	£2,539,089
	Contract scope of work	Set out in technical specification & mechanical and electrical work specification
	Contract programme	Completion of main works by 8 January 2010 and landscaping works by 31 March 2010, Aftercare of landscaping for 5 years to follow.
Contract Execution (project supervision)	Changes to contract price, programme, scope with reasons	Contract price increased to £244,892.33 resulting from 9 compensation events.
Contract Execution (project management)	Changes to contract price, programme, scope with reasons	Contract price increased to £60,714 Programme duration extended to June 2010 to accommodate extended contractor's programme.
Contract Execution (Main contract for works)	Individual changes to the contract which affect the price with reasons	Agreed change to target of £35,000 before commencement and 23 compensation events during construction increasing the price by £137,227
	Individual changes to the contract which affect the programme, with reasons	2 compensation events delayed completion by 137 days to 28 April 2010 for main works and 10 May 2010 for landscaping works
	VO's, claims, Early Warnings & Compensation Events	Early warning and compensation event notices issued as set out in communications schedule
	Payment certificates	13 payment certificates issued at monthly intervals
	Details of any re-award of main contract	None
Post contract completion details (main contract for works)	Actual contract price	Final target price £2,711,316 plus share of saving on budget
	Total payments made	£2,735,683 certified up to March 2010
	Actual contract scope of work	Original specification as changed by instructions forming compensation events
	Actual contract programme	Main work completion 27 April 2010

Documents to be disclosed	
Feasibility study	Project Appraisal Report 6 January 2004
Financing agreement	Project Appraisal Report 6 January 2004 Approved 1 July 2005 Form G1 (supplementary expenditure approval) December 2007 Approved 13 May 2008

Stage of project cycle	List of MPI to be disclosed	Project name: Cobbins Brook Procuring Entity Environment Agency
		Form G2 November 2009
Procurement Strategy		Set out in Project Appraisal Report
Contract Strategy / Type		Set out in Project Appraisal Report
Tender evaluation report (Main contractor)		Contract Award Report
Project evaluation reports (on completion and on-going)		Highlight reports 1 - 17

Appendix 3 – Schedule of documents disclosed

Document title	Subject of document
Definition and budget for project	
Cobbins overall programme	Project programme prepared April 2003
Additional works 4.11.04 with amendments 17.11.04	Increase in construction cost for additional work November 2004
Cobbins Brook cost estimate report draft 17.11.04	Estimate of cost of construction works at £2,306,133
Cobbins Brook cost estimate report draft – addendum 15.12.04	Adjustment to estimate of to allow for programme slip increasing cost by £139,284 to £2,445,417
D3674 Cobbins Brook PAR –Construction 0708-SL2	Project Appraisal report dated 6 January 2004 seeking agreement to scheme at cost of £5,031,000
PAR signatures	Signatures approving spend of £5,031,000 dated 1 July 2005
09 11 20 Appendix B Cobbins Brook Form G1 signatures	Request for increase in cost from £5,031,000 to £6,062,000 – programme, lands acquisition & design changes affecting works and consultant's contracts
09 09 10 Appendix B Cobbins FAS form G1 executive summary	Signatures approving increase in spend to £6,062,000 dated 13 May 2008
09 11 20 Cobbins form G2 & report final rev1 091210	Request for increase in cost from £6,062,000 to £6,190,000 for various cost increases
Cobbins form G2 SoD signature sheet	Signatures approving increase in spend to £6,190,000 dated 21 January 2010
Contract for design and Supervision (Halcrow)	
Cobbins project services contract – contract instruction 25 4 05	Draft of Halcrow appointment for design and supervision of work in sum of £447,531.50 dated 25 April 2005

Document title	Subject of document
Cobbins PSC contract document	Contract Data dated April 2005 for Halcrow appointment at cost of £447,531.50
D3875 Cobbins Brook detailed design proposals	Halcrow submission for design & supervision at cost of £447,531.50
Cobbins Halcrow costs final	Halcrow costs build up April 2005
Cobbins Brook contract instruction 02.12.05	Draft of Halcrow appointment for design and supervision of work in sum of £297,565.50 dated 7 November 2005
Halcrow Contract Instruction	Instruction signed 5 August 2008 for Halcrow to complete design and supervise construction between August 2008 and December 2015 in sum of £201,424.57
Halcrow signed PSC document	Contract details for work from August 2008 to December 2015
Halcrow – Cobbins Brook June 09	Health & safety audit of design process dated 22 June 2009
CE register – Cobbins	Schedule of compensation events during design stage
CE08 – Cobbins Brook final	Assessment of design stage ce 8
CE09 – Cobbins Brook project dealyed 1 year	Assessment of design stage ce 9
Cobbins CE 5-10 breakdown	Final assessment of design stage compensation events 5 - 10
Cobbins compensation event 01 – 09	9 separate files of supervision stage compensation event assessments
Cobbins Brook progress report may 2007	Progress report during design stage for the month of May 2007
Contract for construction Project Manager (Jacobs)	
07_EA_02 ECC PM statement of	Scope for PM appointment

Document title	Subject of document
requirement_03.00_090128_F_00	
07-EA-02 ECC PM evaluation model 090219 F 01	Tender assessment of Project Manager bids
D4-3 Cobbins Brook PSC 110309_2	Contract Data dated 6 March 2009 competed for Jacobs appointment as Project Manager at cost of £57,300
117_07_SD3 ECC PM appointment letter	Model letter of appointment – not completed
D5-18 CI approved and signed 190309	Signed contract instruction dated 19 March 2009 appointing Jacobs as PM at cost of £57,300
Contract for advance treeworks	
Cobbins Brook FAS – ECSC final 03.03.09	Contract instruction – advance treeworks
090122 NEC contract instruction jce 20.2.09 completed	Contract instruction – advance treeworks
090220 letter of acceptance	Acceptance letter – advance treeworks
Contract for construction (Jackson Civil Engineering)	
Cobbins Brook ME specification final	Specification for electrical & mechanical works
Cobbins Brook Part 1 returnable final 090421 rev1	Tender document for construction work part 1
Cobbins Brook Part 2 non-returnable final 090421	Tender document for construction work part 2
Cobbins Brook specification final 090422	Technical specification for the works
Cobbins Brook CAR report 090427 Final	Contract Award Report for works 27 April 2009 recommending agreement of target cost with Jackson of £2,539,089
CAR Appendix A – details of tender breakdown	Comparison of financial bids for works
CAR Appendix B – Jackson Cobbins Brook 001	Jackson programme of work

Document title	Subject of document
CAR Appendix C – Cobbins Brook risk report rev2 Dec08	Report on risk workshop 5 December 2008
CAR Appendix D – copy of tender assessment model – Cobbins generic – evaluation 23 Oct 07	Tender assessment – quality/price for works
CAR Appendix E – Cobbins Brook - procurement strategy	Proposed strategy for appointment of Project Manager for contract
Jackson – Cobbins Brook FAS contract award letter 090424	Contract award to Jackson dated 24 April in sum of £2,539,089.72
Cobbins Brook FAS ECC April 09	Contract notification form for award of contract to Jackson at cost of £2,539,089.72
063_01 PMI correction of target cost for site clearance 150709	Increase of £35,000 to target price for site clearance omitted from target
Costi site data	Copies of communications Copies of monthly programmes and weekly mini-programmes Details of compensation events Copies of payment and completion certificates
Cobbins Brook audit AP 24-9-09	Site Environmental audit
Cobbins Brook - Jackson SHE audit	Site health & safety audit 4 June 2009
Cobbins Highlight reports Nos 1 – 17	Summary reports on progress on project between November 2009 and April 2010
Preliminary certificate S7(1)	Confirmation that the embankment is suitable for impounding water, dated 1 December 2010
Cobbins Gateway 4 form-100505	“Gatway 4” review of suitability of scheme for acceptance dated 27 April 2007
Cobbins Asset handover record-100427	Report on asset to be taken over dated 27 April 2010

Document title	Subject of document
D4-52 Cobbins Completion Certificate 270410	Completion certificate for main works certifying completion on 27 April 2010
Snagging List-programme to completion 200510	Updated list of work outstanding following completion issued on 20 May 2010
Project outturn cost	
Cobbins Brook forecast may-100511	cost forecast for scheme & invoices to February 2010
20100401MCR Cobbins incentivisation – pain gain calculation with steel	Calculation of pain/gain 6 March 2009
Cobbins Brook FAS risk register March 2010	Contract risk register updated November/ December 2009
20100501MCR Cobbins incentivisation – pain gain calculation with steel (2)	Calculation of pain/gain 6 March 2009

Appendix 4 -- schedule of contract changes–Halcrow contract

Part 1 -- design stage

	Schedule of compensation events - Halcrow design					
					Basis of assessment	
No	**Date**	***Subject***	**Value**	**Time**	**Fees**	**Expenses**
1	17/05/2005	Topographic survey procured by EA not Halcrow	-£10,000.00	Nil	- 10,000.00	-
2	30/06/2005	Planning addendum for change in construction access route	£5,789.72	Nil	5,539.72	250.00
3	30/01/2006	Additional SI required	£16,936.97	Nil	15,886.57	1,050.40
4	22/05/2006	Photomontages	£1,266.44	Nil	1,166.44	100.00
5	16/05/2007	Additional design requirements	£57,521.61	Nil	57,521.61	-
6	16/05/2007	Exchange Land Assistance	£4,295.88	Nil	4,295.88	-
7	16/05/2007	Hydrology Review	£8,338.76	Nil	8,140.48	198.28
8	20/08/2007	Delay to Halcrow programme	£52,451.09	Nil		
9	30/10/2007	Project delayed by 1 year to 2008 due to imposed funding constraints	£46,657.46	1 year	38,347.72	8,309.74
		Totals	£183,257.93		£120,898.42	£9,908.42

Part 2 -- supervision stage

					Basis of assessment		
No	**Date**	**Subject**	**Value**	**Time**	**Fees**	**Expenses**	**Comment**
1	05/01/2009	Preparation of NEC Short Contracts for the procurement of steel sheet piles and tree works	2,156.55	Nil	2,156.55	-	Additional contract documentation
2	06/01/2009	Preparation for Public Inquiry	4,981.21	Nil	4,631.21	350.00	Consultation with external Interested Parties
3	23/04/2009	Minor additional items of work required to allow commencement on site including; fees for the discharge of Planning Conditions, subsuming ECSC into main contract, amendments to one-way system following resident objection, design of permanent protection slab over the gas main following late rejection of detailed slab by E.ON, various drawings requested for legal/land agreements, cctv survey at Clockhouse, technical note in respect of vibrations induced by additional traffic on one-way system, Traffic Management Order fees.	11,906.11	Nil	9,551.71	2,354.40	Project management and detailed design
4	24/04/2009	Further to numerous E-mails from Environment Agency and Jackson Civil Engineering regarding potential changes to the specification and the subsequent telephone discussions we have reviewed the geotechnical specification, revisited tender correspondence, held telephone discussions and internal discussions. A meting to discuss the earthworks specification is scheduled for 16th April 2009 requiring attendance from Halcrow's design and project staff.	2,895.38	Nil	2,795.38	100.00	Additional contract documentation
5	29/04/2009	Ecological survey for voles following scrub clearance, preparation of survey report, liaison with Natural England concerning translocation, preparation of management plan for water vole mitigation, supervision of enhancement works on site. Preparation of Ecology plan.	9,448.07	Nil	9,048.07	400.00	Environmental assessments
6	11/09/2009	Review of various Value Engineering Options including, contractors alternative culvert design, amendments to drawings for alternative brick cladding detail, redesign of Cobbinsend Road	3,791.06	Nil	3,741.06	50.00	Additional site supervision
7	11/09/2009	Instruction that a DMBRK analysis is not required	- 8,000.00	Nil	- 8,000.00	-	Omission of mathematical modelling
8	18/11/2009	Instruction for Halcrow to comple As Built drawings	2,003.01	Nil	2,003.01	-	Additional site supervision
9	19/02/2010	Minor additional works including; design review of concrete cube results, flow capacity calculations, preparation of PSRA, re design for Brookmeadow wood, Cobbinsend Road and outfall to the northern borrow pit, signage drawings, additional costs of TMO. Additional time associated with contract overrun beyond 11 December 2009.	14,586.12	Nil	13,993.62	592.50	Additional design, site supervision, CDM duties
		Totals	43,767.50		39,920.60	3,846.90	

Appendix 5 -- schedule of contract changes–Jackson contract

	Schedule of compensation events				Basis of assessment			
No	Date	Subject	Value	Time (days)	People	Equipment & materials	Subcontract	Fee
1	30/03/2009	Animal mitigation works	12,280.32	0	3203	867	7300	910
2	01/04/2009	Vole Mitigation Works	22,310.66	0	9805	3852	7000	1653
3	01/04/2009	Newt fencing to entrance	3043.91	0	1229	1590		225
4	06/08/2009	Maintenance of site clearance at potential vole habitats	2,491.25	0	2058	433		
5	16/07/2009	Pruning of Tree 231	848.99	0	786			63
6	04/08/2009	Drainage Works at Scatterbushes	223.80	0	207			17
7	04/08/2009	Ditch Crossing North of Translocated Voles	3,075.35	0	1848	1000		227
8	18/08/2009	Cost estimate for Fernhall Lane and Long Street patch repairs	15,559.78	0	387		14020	1153
9	06/08/2009	Blinding Concrete under pre-cast box culvert	852.62	0	556	233		64
10	19/10/2009	Telemetry and electrical	2,066.20	0	341		1572	153
11	18/11/2009	Davit	7,863.64	0	341		6940	583
12	10/11/2009	Landscape details	6214.77	0	341		5428	446
13	12/11/2009	Longer fence post	2,016.79	0	341		1526	150
14	23/02/2010	Alternative Power Supply route	25,000.00	123	15000		10000	
15	14/01/2010	Additional fencing at inlet and outlet works	2,171.50	0	341		1670	161
16	04/12/2009	Outlet Davit	4,050.00	0	1000	1000	1750	300
17	03/03/2010	Additional requirements from Operations - penstock checker plate	3,014.44	0	341		2450	223
18	14/05/2010	Brook meadow works	5,940.00	0			5500	440
19	19/02/2010	Jackson to order Electric meter from British Gas	326.54		302			25
20	14/05/2010	Changes to lanscaping details and rabbit protection	1,310.14	0			1213	97
21	07/04/2010	Changes to Outlet Davit	324.00				300	24
22	14/05/2010	Changes from Handover Meetings	4,752.00	14			4400	352
23	07/05/2010	Fernall Lane/ Long Street repairs	11,490.44	0			10639	851
		Totals	£ 137,227.14	137	38,427	8,975	81,708	8,117

Appendix 6 -- Table of cost forecasts and budgets

Costs in £ x 1000	Costs to March 2010	Forecast of final cost March 2010		Budget
HA agency staff	341	341		250
Public relations	0	8		
Halcrow	1101	1120	1148	1137
Panel engineer	13	20		
EC Harris	66	68		64
Jacobs	55	61		67
Jackson advice	31	31		55
Breheney Newts	88	88		
Services	7	10		
Jackson construct	2764	2808	3240	3237
Steel	334	334		
Site investigation	33	31		25
Lands DW	430	446	989	530
Compensation	383	412		527
Lands MM	125	131		
Other costs	20	39		43
Risk		10		255
Totals	5791	5958		6190

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