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Your Ref:
Our Ref: 504XXXX/Covell's Drain/021/CO/001

23 October 2006

Mr P. Matthews
South Cambridgeshire District Council
Cambourne Business Park
Cambourne
Cambs, CB3 6EA

Dear Pat,

FLOOD RISK ASSESSMENT FOR COVELL'S DRAIN EASTERN EMBANKMENT IMPROVEMENTS

Thank you for attending our offices on 20th September to discuss the issues of Covell's Drain eastern embankment with respect of flood risk to the surrounding villages. We would be extremely interested in working with you on this project. This letter outlines our initial ideas on approach, programme and costs.

As you know, Atkins has a long standing involvement of flood risk management along the River Great Ouse between Ely and St. Ives through the national consultancy framework for the Environment Agency. We feel that our previous involvement in projects in this area, particularly the Fen Drayton Lakes Drainage Improvement Viability Study undertaken this year, will prove beneficial to a study of Covell's Drain and provide substantial cost savings.

Background

The eastern embankment running adjacent to Covell's Drain between the disused railway line and New Bridge has been increased in height and breadth in recent years. The Environment Agency has raised objections to these alterations due to the potential impact upon the floodplain mechanism that may lead to increased flood risk to the surrounding communities.

We understand the primary objective of this study to be a review of the impact, in terms of flood risk, to the surrounding communities caused by the raising of Covell's Drain eastern embankment. The detail of the assessment must be to the satisfaction of the Environment Agency. Our assessment will require the use of mathematical models to analyse the complex river and floodplain processes.

River Modelling

Three river modelling options have been considered providing varying degrees of assessment and accuracy. Each utilise the existing Environment Agency Mike 11 (one dimensional) model of the River Great Ouse which includes a full range of hydrology predictions. Although this model has been developed further to examine the influence of Fen Drayton Lakes, it currently excludes the drains and floodplains around the village of Swavesey. Please see the attached figure that assists with the explanations given below of the modelling options.

Option 1 – Existing Ouse model with extension of Covell's Drain upstream to New Bridge and inclusion of tributary at High Causeway Bridge. This analysis will determine any changes of peak flood levels due to the alterations of Covell's Drain embankments.

A limitation of this option is that it does not assess changes of flood risk to Swavesey as it is not represented within the model. However, it does provide a good indication of whether flood risk to Fen Drayton is affected with a reasonable accuracy of magnitude. This option also assumes that any flood waters accumulating on the land to the east of Covell's Drain does not impede water overtopping along the eastern embankment.

Option 2 – Existing Ouse model with incorporation of Swavesey drains and floodplain. This option also requires the extension of Covell's Drain upstream to New Bridge and inclusion of the tributary at High Causeway Bridge. This analysis will determine changes in peak flood levels in the surrounding communities, including Fen Drayton and Swavesey, due to the alterations to Covell's Drain embankments.

A limitation of this option is that the current model is already very complex and utilises 1-D analysis theory to its limit, which may affect accuracy and confidence in its output. However, although the accuracy of the magnitude in changes to peak flood levels may be marginally compromised, this model should provide an accurate assessment of changes to the floodplain mechanisms.

Option 3 – Develop 2-D river model of River Ouse and floodplains including Fen Drayton lakes and Swavesey. This option requires additional data of Covell's Drain upstream to New Bridge and tributary at High Causeway Bridge. This analysis will provide a highly accurate assessment of changes in peak flood levels due to the alterations to Covell's Drain embankments.

A limitation of this option is that a 2-D model does not currently exist for this stretch of the River Great Ouse, which would require the construction of a completely new model.

The above options will provide varying degrees of flood risk information to assist with a resolution of the dispute surrounding the impact of embankment raising. We believe that an initial assessment using Option 1 would indicate whether negative impacts to Fen Drayton village exist and highlight the requirement for a further study using Option 2 or 3.

Data Requirements

Each option would require the approval of the Environment Agency to utilise the existing River Great Ouse Mike 11 model, LiDAR and other topographical survey information. All options require the collection of topographic information of the Covell's Drain between the disused railway crossing and New Bridge.

In addition, Option 2 requires the availability of the mathematical model for Swavesey drains held by the Environment Agency. Details of some culverts and other structures not included in existing models may be required. LiDAR data for the area in and Swavesey would also be required.

Option 3 will require all the information listed above.

Proposed Fees

We propose to carry out the work under the terms of the NEC Professional Services Contract using remuneration Option E: time based contract at the following rates;

Principal Engineer/Director	£525/day
Senior Engineer/ Senior Hydrologist	£350/day
Engineer/ Graduate Modeller	£250/day

Staff CV's and a detailed breakdown of the proposed costs can be provided as required.

Our estimated prices, exclusive of VAT, for the various modelling options are;

Modelling Option	Price
Option 1 - Existing Ouse model with extension of Covell's Drain	£14,500
Option 2 – Existing Ouse model with incorporation of Swavesey	£30,000
Option 1 followed by Option 2	£40,000
Option 3 – Develop 2-D river model	£65,000

Our proposed fees do not include the collection of additional topographic survey information. Should our proposal be of interest to you we would draw up a formal contract for agreement.

Programme

We anticipate that a draft report detailing the work carried out under Option 1 could be issued within 3-4 months of instruction. Option 2 and 3 would require in the order of an additional 2 months. A detailed programme for the work will be issued on appointment.

If you have any queries regarding this matter please do not hesitate to contact Richard Chubb or myself. We trust the proposals will be of interest to you and are looking forward to hearing from you in due course.

Yours sincerely

Tim Summers
Proposal Director
for and on behalf of Atkins Water

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