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Cabinet

Coal Bed Methane Project – Decision Report

Date	29 th May 2014
Report of	Director of City Renewal (Place)
Contact officer(s)	Trevor Whittaker, Assistant Director (Green Enterprises) Andrew Briggs, Client Manager for Energy (Green Enterprises)
Cabinet Member	Councillor Andy Platt: Cabinet Member for Green Enterprises
Type of Decision	Non Key Decision
Wards Affected	No Ward Implications

1. Purpose of Report

1.1 The purpose of this report is to advise Cabinet of the status of the Coal Bed Methane (CBM) project and to recommend that the project does not progress further for the foreseeable future, as it has been determined that it failed to pass a key gateway because:

- A procurement exercise has determined that there is currently no private sector interest to invest in the project as a development partner with the Council.
- Using specialist advice we have determined that the project is currently commercially unviable due to the estimated current costs of extraction and distribution.

2. Recommendation(s)

2.1 That Cabinet notes that in its current form the CBM project has failed to pass a key gateway criteria.

2.2 That Cabinet approves Option 1 (as below) - that the project should not progress further unless and until market conditions improve and/or technical conditions are identified that will enable the project to become commercially viable.

3. Options Considered

Two key events have impacted the project:

- Firstly, that no prospective development companies have come forward through the Council's competitive procurement process for a suitable

joint venture partner to bid for the Petroleum Extraction and Development Licence (PEDL) following significant changes in the market conditions surrounding unconventional hydrocarbons, and:

- Secondly that technical and commercial assessment of our Reference Project, using specialist technical advice based on the current project definition and constraints around extraction techniques to be utilised, as a consequence shown the project to be less viable than the lowest net cash generation position predicted in the paper of 5th September 2013.

A key factor is that the gas recovery rate estimated in September 2013 was based on data from the high level studies and advice, (referred to as High Recovery rate).

In March 2014, our detailed technical appraisal of local reserves has arrived at a lower estimated recovery rate (referred to as a Low Recovery rate) over the predicted life of the well with a 90% chance of recovery at this rate. This is based on the technical/exploitation model developed and with no fracking or other enhancement of gas recovery.

This developed technical assessment has led to consideration of the options below.

- 3.1 Option 1: To suspend the project until such time as market conditions and/or technical conditions are identified that enable the project to become commercially viable and enable a private sector development partner to be secured to work with the City Council in making a full application for the PEDL.
- 3.2 Option 2: To proceed without a development partner which would require the City Council to submit a “drill or drop” application for the unallocated Stoke PEDL blocks. This would not be attractive to Department of the Environment and Climate Change (DECC) compared to a firm commitment to drill, as required under a full application, but in any case would incur the Council in significant expenditure and then be subject to reputational risk if the Council could not subsequently secure a development partner.
- 3.3 Option 3: As Option 2 but with a full PEDL application in which the Council would provide all the investment required developing the required gas wells and above ground infrastructure which would require considerable unbudgeted expenditure for a project that it is considered from our detailed assessment to be commercially unviable. This may well not be seen as compliant by DECC as without a development partner we would lack technical capability.
- 3.4 Option 4: To accept that enhanced gas recovery techniques such as ‘fracking’ are explored as alternative extraction methods in an attempt to make the proposition more attractive to potential technical partners. This would directly contradict the Council’s current position on CBM, which has been widely publicised, that fracking is not required. Consideration of fracking would require further detailed technical evaluation and modelling to determine the implications of such an approach. This would incur unbudgeted additional expenditure and carry significant reputational risk based on the public’s current perception of the fracking technique, for example.

Reason for Decision - how the proposal supports the Mandate for Change

➤ Make Stoke-on-Trent the place to bring business	X
➤ Support and develop existing business	X
➤ Work with people to promote independence and healthy lives	X
➤ Make Stoke-on-Trent a great city to live in	X
➤ An effective and confident council	X

Other Implications to be taken into consideration:

Legal	<p>For the project to move forward and develop a proposal to exploit CBM Section 1 of the Localism Act 2011 gives the City Council a wide ranging general power of competence, which includes the power to enter into joint ventures, whether for a commercial purpose or for the benefit of the community. Section 4(2) of the Localism Act 2011 provides that where a local authority does things for a commercial purpose, the authority must do them through a company.</p> <p>The EU Procurement rules did not apply to the selection of a technical partner. However, in accordance with HM Treasury Guidance, for the City Council to choose to select a development partner with technical capability, the City Council must select this partner through a properly regulated process. This process has failed to deliver a technical partner.</p>
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Financial	<p>The City Council approved a total revenue budget for the project of £0.830m at its meeting on 5th September 2013. Expenditure incurred and committed to include project closure will be £0.419m as summarised in the table below:</p> <p>Coal Bed Methane - Projected Close position</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: center;">Budget £000</th> <th style="text-align: center;">Projected Actual Cost £000</th> <th style="text-align: center;">Variance £000</th> </tr> </thead> <tbody> <tr> <td>Internal Project Management External Advisors Costs</td> <td style="text-align: center;">830</td> <td style="text-align: center;">449</td> <td style="text-align: center;">(381)</td> </tr> <tr> <td>External Funding</td> <td></td> <td style="text-align: center;">(30)</td> <td style="text-align: center;">(30)</td> </tr> <tr> <td>Net Cost</td> <td style="text-align: center;">830</td> <td style="text-align: center;">419</td> <td style="text-align: center;">(411)</td> </tr> </tbody> </table> <p>The projected actual cost is a prudent estimate of the costs to be incurred to close down the project, for salient issues include:</p>		Budget £000	Projected Actual Cost £000	Variance £000	Internal Project Management External Advisors Costs	830	449	(381)	External Funding		(30)	(30)	Net Cost	830	419	(411)
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Net Cost	830	419	(411)														

1. The advisory costs assume that the order value for the work commissioned from the financial, technical and legal advisers will be paid in full for the project work commissioned up to the second tranche of the advisory work;
2. A contingency of £13,000 is held to cover the costs of dealing with potential incidentals relating to the closing down of a project.

The estimates of capital investment and potential financial returns as reported to Council in September 2013 and following further analysis are summarised in the table below. This shows that the capital investment costs are substantially higher than initial estimates provided by the technical advisers. Further advice obtained suggests that recoverable reserves are most likely to be at the lower end of the range

Project Financial Summary	Analysis at September 2013 Council £m	Further analysis March 2014 £m
Capital Investment		
DECC guarantee	1.5	1.5
Exploration costs	1.5	8
Capital cost of production well	8	36.9
Equity investment in JV company	7.5	not calculated
Total Capital Investment	18.5	46.4
Cumulative Cash Generation		
Cashflow Range (-) negative (+) positive	-12	-33.1
Cashflow Range (-) negative (+) positive anticipated well life	37	-11.3
	15 years	12 years

Notes:
 profit not calculated due to preliminary status of the calculations
 Further analysis at March 2014 shows the project is not viable
 therefore does not support the preparation of a projected cashflow statement

As a result, the estimates resulting from this further work indicate that the project is not commercially viable at the present time.

Human Resources	The current project manager role is being undertaken by an external contractor with options to terminate according to project progress. There are no direct impacts on existing structures or requirements to redeploy staff resources.
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Equality Impact / Human Rights considerations	There are no immediate impacts foreseen.
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Public Health	There are no immediate impacts foreseen.
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Environmental Impact	There are no immediate impacts foreseen.
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Public Services (Social Value) Act 2012	There are no immediate impacts foreseen, the work to be directly undertaken contained little scope for opportunities with regards to the act.
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Impact on Customers/Partners
Customers will continue to rely on the open market for the supply.

Background papers and information sources
Report to Full Council, 5 th September 2013: "Partnering Arrangements for Energy Extraction (Hydrocarbon Options)". Report, June 2011: "CBM Assessment for Stoke-on-Trent City Council".

Enclosures
None

Report Title: Coal Bed Methane Project – Decision Report

1. Background

1.1 The City Council on 5th September 2013 approved a paper (title: “Partnering Arrangements for Energy Extraction (Hydrocarbon Options)”) recommending the procurement of specialist advice up to:

- Selection of a development partner and;
- Preparation to be ready for submission of an application of a PEDL (Petroleum Exploration and Development Licence).

This was with a view to the Council entering into a joint venture arrangement with a selected partner to extract CBM (Coal Bed Methane) from under the City.

1.2 The stated aim for the use of the CBM gas was to serve the local pottery industry which, being a heavy gas user, was identified as been adversely affected by energy prices and had been very concerned to be put on notice of supply shutdown during the shortage of gas storage in the UK which has occurred several times in the past few years and most recently in April 2013.

1.3 Based on the information gathered at the time, a range of financial returns for the project opportunity was arrived at which at the upper end indicated the potential to generate a viable return from a single wellhead over its typical life.

1.4 Whilst external advice had been sought this was at high level and the report to Council of 5th September 2013 noted that “further technical, financial and legal work is required in developing the business case, prior to the Council considering whether to apply for the PEDL in 2014”. The report to Cabinet noted too that “members will need to be satisfied that a robust and commercially viable proposal, capable of generating an acceptable financial return, is demonstrated before approving progress to Stage 2 and committing investment of capital resources into establishing the JVC [i.e., a partnership with the selected development partner]”. It therefore sought “approval of additional revenue budget to finance business case development”.

1.5 It noted amongst the risks identified a potential risk that “market soundings establish there is insufficient demand for CBM at a price which will deliver a return in accordance with the Council’s strategic investment objectives”. It included too “in the event that outcomes for this stage are not satisfactory the process would be stopped and be reviewed by the Project Board”.

1.6 In accordance with the proposal in the report to Council of 5th September 2013, delivery of the project was governed under the auspices of the Green Implementation Board by a Project Board specific for the CBM scheme.

2. Policy Context

- 2.1 One of DECC's key strategies is to encourage decentralised energy and this is consistent with the aims of the Council to secure local sources of energy to provide security of supply and predictability of price for local businesses and residential consumers.

3. Proposal

3.1 Project Summary

Bearing in mind the range of uncertainty in the above financial prediction, and with the concern to have a single set of requirements that each prospective development partner would bid their financial and commercial terms against, so we could compare like with like, the project team created a Reference Project. Under the Reference Project the following options were considered:

1. Export the gas to a Combined Heat and Power (CHP) and produce power for export into the national electricity grid.
2. Ship the gas to local heavy gas users, via either a private pipe or via the national gas grid.
3. Bottle the gas for sale.

The first option was determined from the advice of our consultants to be the more financially viable route.

A market testing exercise was also undertaken at the outset of the scheme in advance of formal procurement to determine the interest of the private-sector in partnering with the Council for the exploration and exploitation of CBM.

Two key events have then impacted the project:

- Firstly, that no prospective development partners have come forward through the Council's competitive procurement process for a suitable joint venture partner to bid for the PEDL following significant changes in the market conditions surrounding unconventional hydrocarbons, and:
- Secondly that technical and commercial assessment of the Reference Project, using specialist technical advice based on the current project definition and constraints around extraction techniques to be utilised, has shown the project to be even less viable than the lowest net cash generation position predicted in the paper of 5th September 2013.

A key factor is that the recoverable gas estimate has had to have been downgraded. The gas recovery rate estimated in September 2013 was based on data from the high level studies and advice and referred to as High Recovery rate.

In March 2014, our detailed technical appraisal of local reserves has arrived at

a lower estimated recovery rate referred to as a Low Recovery rate over the predicted life of the well with a 90% chance of recovery at this rate. This is based on the technical/exploitation model developed and with no fracking or other enhancement of gas recovery.

This development of the technical assessment has led to a revised financial model which indicates that the project opportunity is not viable.

Hence the recommendation by the Project Board / Green Implementation Board via the Corporate Director's Board to Cabinet set out in this paper is to suspend the project until such time that market conditions improve and/or the technical constraints identified can be addressed that might lead the scheme to become viable.

3.2 **Project analysis**

Analysis of the project opportunity is set out below:

- One of the City Council's aims is for the city to become more energy self-sufficient in the future to provide security of supply and price predictability for local businesses and residents. These benefits are seen as key pillars to the City Council's Mandate for Change, supporting its drive for economic regeneration and to address fuel poverty.
- Gas from un-mined coal beds, referred to as Coal Bed Methane (CBM), is known to be in recoverable deposits that underlie the city of Stoke-on-Trent.
- To be in a position to exploit the CBM gas reserves, any applicant would need to enter the PEDL competition for the Stoke-on-Trent Area. Although the Council can demonstrate a financial and environmental competence, a full PEDL application would require the Council to engage with a technical partner to provide the relevant technical competencies.

The Council decision on 5th September 2013 was to proceed with an evaluation stage of the opportunity and take detailed advice from external specialist consultants in order to fully consider the project in detail and to inform and evaluate the project before returning it to Cabinet once a potential technical partner had been selected and a PEDL application prepared.

Representatives from the Project Board on 27th March 2014 reviewed the current status of the scheme with the view that for it to proceed it needed to demonstrate the ability to meet four key criteria:

1. Support to local business;
2. Social impact;
3. Reputation of the Council; and
4. Financial return

The conclusions of this review and the changes in the operating environment have been assessed against these criteria and are outlined below:-

1. To support local business:

The work by our specialist pipeline advisors, has identified that it is likely to be uneconomic to deliver gas to local consumers, either through a private network or via the national gas grid, due to the relatively high costs of implementation. There are also commercial risks associated with a limited customer base which is further constrained by the limited supply of recoverable gas available from each preferred location.

2. Social impact - to provide gas to local consumers at a predictable, attractive price:

The more financially attractive options are limited through basic project economics to two potential solutions of either supplying gas to end users via the national gas grid or for exporting it to an engine to generate electricity. Whilst the methane could be sold to local consumers and shipped via the national gas grid, the costs of preparing the gas to a specification acceptable to National Grid make this option uneconomic. Electricity generation is considered to be the more commercially viable option. The power produced could be exported to local consumers via private wire but the cost of providing this infrastructure is estimated to negate the potential financial return.

3 Reputation of the Council:

The current political debate around exploration and development of onshore shale gas, and the public perception that fracking is harmful, could impact directly on the Council even if fracking, as has been the Council's stated position was not required. Current published information clearly links CBM extraction to the use of hydraulic fracturing (fracking).

4. Financial return:

The project would need to meet the basic commercial requirement of making an acceptable financial return when balanced against the risks of development. A detailed technical evaluation and commercial review has shown that the financial risk is higher than the range predicted at the time of the Council decision of the 5th September 2013 to proceed to evaluation stage and no options are estimated to achieve a break even or profitable scenario.

For an investment in a single well head, the previous projections for the project suggested it could provide a range of scenarios that indicated potential to achieve a net cash generation over a well head life. From this detailed assessment it has been found that there is currently no such potential.

The failed procurement to select potential development partners from the commercial exploitation and development sector, with no responses being submitted, has highlighted the unattractiveness of the scheme.

3.3 Recent market changes in the unconventional gas exploitation sector

CBM, together with shale gas, is described as an unconventional gas. The market environment around unconventional gases has been rapidly evolving since the subject of shale gas came to the public's consciousness in the Summer of 2013, and this has affected the public's overall perception (arguably unfairly) of CBM and in turn the attractiveness of CBM to the private-sector.

As a result, since the report to Council in September 2013 that sought approval to evaluate the business case for a project to exploit CBM, a number of significant changes have occurred. In short private-sector developers and their investors view shale gas as the most attractive prize and hence have secured funds that are dedicated to that particular market. They consider CBM to come with much of the negative PR of shale gas and the lower returns available do not outweigh this, even if they could divert funds to exploiting a CBM opportunity.

The relatively poor viability of exploiting the CBM is compounded by the most attractive areas in the City for extracting the reserves being disparate and the potential of each being relatively small. Typical shale gas fields now being explored in the UK offer an estimated magnitude in the region of 1000 times more gas in place than the identified local reserves.

Whilst some parties showed interest in our soft market test prior to December 2013, this interest had dissipated when we undertook a formal procurement to shortlist a potential development partner in January 2014.

3.4 **Pricing**

High, Medium and Low level price curves were used in assessing the potential commercial viability of the project. An estimate of the Potentially Recoverable Reserves from shale gas in the UK conservatively estimates that up 30 years of the UK's annual demand for gas could be met from these reserves. It was on this significant potential supply that the low revenue price curve was included in the outline evaluation of the CBM project. In July 2013 a report "Unconventional Gas, The potential impact on UK Gas Prices" prepared by Navigant Consulting (Europe) Ltd was issued by DECC that referred to this effect.

3.5 **Summary**

The above and following key factors would indicate that the development resources in the UK are more likely to be deployed in the extraction of shale gas elsewhere in the UK than in CBM in the Stoke PEDL area:

- Low level of Potentially Recoverable Reserves for CBM compared with an estimated higher level for shale gas elsewhere in the UK.
- Need for high fixed costs to operate in a PEDL area where the fractured geology would make a CBM extraction operation considerably more difficult than would be the case for extracting methane from more extensive and more easily accessible shale deposits elsewhere in the UK.
- Coal beds in the UK are much thinner than shale beds. As an example, a recent research project into CBM at a local university has encountered problems with horizontal drilling, in part, due to the fractured nature of the thin coal beds.

3.6 The lack of market interest, underpinned by a low level of Potentially Recoverable Reserves reflects the private-sector's perceived risk of the Stoke PEDL proposition as a commercial opportunity.

- 3.7 For the CBM project, it was recognised that the project in its current form will not be viable should a private sector partner not be secured to provide the expertise, technical capacity and finance required to progress the project. The technical review of the potential for recovery of gas under the current proposal makes the Stoke-on-Trent proposition unattractive to the market.

4. Consultation

- 4.1 Consultation has been carried out with the relevant Cabinet Member, Financial Services and with Legal Services.

5. Next Steps

- 5.1 On approval to suspend the project in its current form to communicate the decision externally in the most appropriate manner and to terminate the appointment of the specialist advisors.