AGENDA ITEM NO. 14

BRISTOL CITY COUNCIL
CABINET

25 MARCH 2010

Report of: Strategic Director - City Development

Title: **Avonmouth Wind Turbines Project** **Ward:** Avonmouth

Officer Presenting Report: Alun Owen, Service Director Major Projects City Development

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RECOMMENDATION

That members approve:

1. The procurement of a wind farm developer to design, build and maintain two turbines as set out in option A on behalf of the City Council, subject to legislation changes enabling Local Authorities to sell the electricity they generate.

2. The funding for radar mitigation and fees is identified in the financial year 2010/2011 to the value of £350,000.

3. The principle of using Prudential Borrowing or other funding to fund the project over a 25 year period.

4. The principle that any finance generated by this project is used to fund future carbon reduction projects.

Summary

There are a number of options for procuring the wind turbines, as identified in paragraphs 8, 11-13. This report identifies the potential benefits of the Council owning the wind turbines, and sets out the reasons why this is the best option for the Council.

The significant issues in the report are:

- Contribution these wind turbines can make to the Council's and Central Government's agenda on CO_2 reduction.
- The financial benefits for the City Council.

Policy

1. This project will contribute to the achievement of the Corporate Plan: Our City - ambitious together, and will be in keeping with Bristol as a Green Capital. The proposals are in accordance with the Council policy on energy management and CO_2 reduction.

Consultation

Internal

Legal
Finance
Corporate Procurement
Sustainable City

External

EIC Energy Experts

Context

2. Planning permission for two wind turbines up to 3MW each was granted in January 2009. Development must begin before 13 January 2014. It has not been possible to move forward on this until the legislation on Carbon Trading was clarified late last year and the legal changes required to allow Local authorities to sell electricity from wind generation were put in motion by government.
3. There is a very significant planning condition which deals with the impact of the turbines on Filton Airfield's radar. A solution to mitigate this issue has to be in place before the wind turbines can operate. Work to mitigate these effects is on-going jointly with Wessex Water. It's expected that the Council's contribution will be approximately £350k including fees. The money needs to be identified and set aside in 2010/2011 financial year if progress is to be maintained on the project.
4. For financial assessment purposes the two wind turbines are predicted to generate 12,600 Mega Watt hours (MWh), compared with a potential output of 17,600 MWh of renewable electricity each year for the life span of the turbines (25 years). This minimum figure represents 16% of the Council's current annual electricity requirements if street lighting is taken into consideration.
5. The government have set up the financial mechanisms for Renewable energy generators to receive funding streams so they can pay back their investments.

a. Renewable Obligation Certificates (ROCs), awarded for each MWh of renewable electricity they generate.
b. Climate Change Levy Exemption Certificate (LEC)

(See Appendix A for a detailed explanation of ROCs, Climate Change LEC & Climate Change Levy.)

6. When traded, the value of the green electricity produced by the wind turbines is essentially made up of three components:

a) The value of the ROC for 20 years.
b) The value of the Climate Change LEC for the life of the project.
c) The value of the electricity for the life of the project.

7. As the main objective of this project is to achieve substantial CO_2 reductions for the Council, whilst retaining flexibility for future changes in legislation in a cost efficient way, it is proposed that the City Council owns both wind turbines.

Proposal

8. **Option A – Full Council Ownership:** The Council funds the project using prudential borrowing or other sources of finance. A wind farm developer would be procured to carry out the design, build and maintenance of the turbines, though the expectation is that no money will pass to the tenderer until the turbines are operational. The Council would benefit from the ROCs and the sale of the electricity from both turbines. This option gives the Council full flexibility over whether to retire the ROCs in the future, thereby claiming the full CO_2 savings and gives full flexibility for future changes in legislation.

9. This proposal could be expanded in the future to incorporate an element of community involvement through a share or bond issue once the turbines have been built. This would promote wider involvement with the project, whilst enabling the Council to recoup some of its initial financial outlay. However an appropriate vehicle for part-community ownership needs to be identified and the costs associated with this approach fully researched before proceeding.

Other Options Considered

10. Following the return of a soft market testing questionnaire from potential wind developers three other options were identified. The other options considered were.

11. ***Option B - Part Community Ownership***: The City Council sets up a Joint Venture company and sells up to 49% of the shares in the company. On this investment an annual dividend would be paid. This option would give the Council less control and flexibility in whether they could retire the ROCs (in order for the Council to claim CO_2 savings).

12. ***Option C - Part Developer Ownership:*** The City Council procures a partner to build and operate the turbines, with one turbine being transferred to the ownership of the Council and the other 'kept' by the development partner. The Council would grant a lease for the area of the turbine owned by the partner. The Council would benefit from the ROCs and the sale of the electricity from one of the two turbines. (*It is assumed that this is a viable option at this stage but would not be known until tenders are received.)*

13. ***Option D - Lease site to Developer to Operate Wind Turbines:*** The City Council grants a lease on the land to develop the project. The lease grants all control necessary to build and operate the project over the project life (25 years). Tenderers to bid on the value of this lease. The Council would not benefit from any ROCs (or CO_2 savings from retiring ROCs) or income from selling the electricity receiving instead a regular rental payment.

Costs

14. Appendix C indicates the basis of the financial assumptions in this report which has considerable contingencies built into them. The option for the Council, giving the best returns and flexibility, has been shown to be Option A -100% BCC ownership **This represents a minimum return on investment of 14.82% over the 25 years (0.59% annually) at discounted rates.**

1. Council Ownership

The capital set up and average revenue operating costs are as follows:

CAPITAL	£'000
Set up Costs	7,500
Contingency	1,900
Total Set up Costs	9,400
REVENUE	
Income*(see footnote)	(1,100)
Operating Costs	150
Borrowing Costs	750
Total Operating Costs	900
Average Annual Net Surplus	200

* Footnote: See financial implications revenue regarding prudent assumptions

Risk Assessment

15. The main risks identified are:

- The planning condition for the radar has to be satisfied before the turbines can operate. Work is underway to discharge the condition and no tender will be let until the condition is discharged. If finance is not allocated in paragraph 3 then radar mitigation work cannot proceed to a conclusion, which will have impacts on project delivery.
- Procurement risk. Option A is a design, build and operate solution, thus minimising the risk to the Council. Not paying a developer until the wind turbines have been shown to work minimises this further.
- An unexpected event which results in loss of electrical generation can be mitigated by having in place a maintenance contract which ensures continuity of performance. In addition the nature of the design of wind turbines indicates that the likelihood of a catastrophic failure, such as a fire, is relatively small.

16. The main risk of not agreeing to this course of action is to lose the ability to retire ROCs for this development and therefore claim the CO_2 savings at a later date.

Equalities Impact Assessment

17. None for this development**.**

Environmental Impact Assessment

18. The environmental impact of the development of the turbines has been considered in a formal Environmental Impact Assessment and in the determination of the planning application. (See Appendix B Environmental Impact Checklist.)

19. The decision in this report is to identify the procurement model for the project. There are no significant differences in the environmental impact of the four options.

Legal and Resource Implications

Legal Any procurement must comply with EU and UK rules on procurement and the Council's own regulations.

Section 11 of the 1976 Local Government (Miscellaneous Provisions) Act expressly allows Local Authorities to produce heat and electricity and to sell the electricity produced from the heat but oddly

enough a Local Authority does not have the power to sell electricity produced from other sources, such as wind power. However the Government is currently consulting on changes to the Section 11 which would allow Local Authorities to sell electricity generated by them from renewable sources. The consultation period ends on the 2nd June 2010 and depending on the outcome of the consultation any necessary regulations would be made in Summer 2010.

Legal advice given by: Sheelagh Dawson, Contract Solicitor

Financial

Revenue The scheme will generate annual income of £1.1M and average operating/borrowing costs of £900k creating an annual surplus of £200k. In determining the annual surplus of £200k, a number of prudent assumptions have been made which mitigate any risks and could potentially add to project return. Even though it has the potential to generate 17,600 MWh, other wind turbines at Avonmouth produce electricity in excess of their designed capability, costings have only assumed 12,600 MWh - a 40% contingency on income. Similarly, electricity prices have been set below current levels thereby creating further potential for contingency if we assume prices either remain or exceed current levels in the light of peak oil, etc. In addition the value of ROCs has been assumed at £45.50. This is likely to rise considerably, see Appendix C. This could add a further return to the project over 25 years of £18m increasing the return on investment to 198.5%.

Capital The overall scheme costs are set out in paragraph 14A. The set up costs of £9.4M (includes a 25% contingency of £1.9M) will be repaid through prudential borrowing over 25 years at 5.5% from operating income. However, it should be noted that in proceeding with this scheme there is an opportunity cost regarding the lost rental of the land amounting to £55k representing £1M lease at 5.5%.

Financial advice given by: Mike Harding, Finance Business Partner

Land The site is owned by the City Council and valued at

£1.0 million. Progressing with this project may stop this potential capital receipt being achieved.

Personnel There are no personnel issues directly arising from this report.

Appendices: Appendix A - FAQs

Appendix B – Eco Impact Checklist

Appendix C – Assumptions used in Financial Model

ACCESS TO INFORMATION
Background Papers:

Avonmouth Wind Turbines planning application, including full Environmental Impact Assessment can be accessed at:
http://e2eweb.bristol.gov.uk/publicaccess/tdc/tdc_home.aspx
The application reference is 08/03724/FB.

APPENDIX A

– FAQs

1) What is the Renewables Obligation?

The Renewables Obligation is an obligation the Government has placed on electricity suppliers that a certain percentage of their electricity supply each year should come from renewable sources. In order to demonstrate compliance, the suppliers need to have a sufficient number of ROCs. These ROCs may be traded, eventually to be bought by those electricity supply companies who don't own enough renewable generation capacity of their own to meet their obligation.

2) What is a Renewable Obligation Certificate (ROC)?

Ofgem require suppliers to produce evidence of their compliance of the scheme by producing green certificates referred to as Renewable Obligation Certificates (ROCs). Each ROC represents one Megawatt Hour (MWh, 1,000 units or 1,000 kWh) of renewable electricity generated. ROC's are awarded to renewable generators who are accredited with OFGEM. Therefore if you are a renewable generator, the ROCs can be sold to electricity companies/suppliers providing an annual income. This would be in addition to revenue received on all exported units of electricity, and help reduce payback time. ROC's can be claimed on all energy produced, even if you use it yourself.

3) What is double counting?

The Council cannot claim both a CO_2 reduction benefit from generating renewable electricity and also benefit financially from selling ROCs associated with that generation. This is to ensure 'double counting' does not take place. If legislation was to change and we were able to claim the CO_2 reduction, the Council would then have to voluntarily 'retire' the equivalent ROC.

4) What is the Climate Change Levy?

The Climate Change Levy (CCL) is a levy on non-domestic users of electricity of 0.47 p/kWh, whilst renewable electricity is exempt from the levy. Therefore, every MWh of renewable electricity generated also earns a Levy Exemption Certificate (LEC), which again can be traded, and which can be purchased by large users of electricity to avoid paying this levy.

5) How long will a ROC last?

The Government intends that suppliers will be subject to a renewables obligation until 31 March 2037.

6) What is the certainty of the sale of a ROC?

The RO is designed with the intention that there will never be enough ROCs in existence to allow all suppliers to entirely satisfy their

obligation to submit ROCs. As an alternative to submitting ROCs, suppliers can "buy-out" their obligation by paying a fee to Ofgem for each ROC it was obliged to, but has not, submitted. This fee is referred to as the "buy-out price".

All the money received by Ofgem by way of buy-out price payments is aggregated together to form a "buy-out fund". The money in the buy-out fund is then paid back to those suppliers who submitted ROCs in proportion to the number of ROCs they submitted – this is sometimes referred to as the "recycling payment".

The buy-out price and the recycled payment (or at least participants' estimates of the recycled payment) determine the market value of ROCs, as suppliers can either chose to (1) pay the buy-out price or (2) buy ROCs and benefit from the recycled payment.

7) How much is a Renewable Obligation Certificate (ROC) worth?

The government sets the values of ROCs; the price increases each year with inflation. ROCs are bought and sold in the market place by large generators, traders, brokers and electricity suppliers. Market prices vary on a daily basis. To see recent ROC prices look at the Non-Fossil Purchasing Agency website http://www.nfpa.co.uk/

8) What is the N.P.V.?

NPV is net present value. This takes into account the effect of inflation on money - so basically takes into account that £1 in 25 years is not worth the same as £1 now. It has been assumed that £1 decreases in value by 3.5% each year, and so the revenue from the turbines decreases in value by 3.5% each year. So the NPV figures given are the net profit of the project after 25 years. It has also been assumed that the value of the electricity is not inflated.

9) What is a Green Bond?

Green bonds are issued by organisations as a way of raising money to invest in their business. They have a nominal value, which is the amount that will be returned to the investor on a stated future date (the redemption date). They also pay a stated interest rate each year - usually fixed.

10) What does community ownership via a joint venture mean?

Public interest and participation can be promoted when many individuals have invested money with the intention of working together.

The energy experts ‘EIC’ have provided responses to the following questions:

- The future for ROC prices and implied ROC value, and will the scheme be sustained?

A summary of the EIC advice confirms that the ROCs will be confirmed

until 2037, with prices ranging from £44/MWh in 2010 to £55/MWh in 2017 – the payback period. After this time projections are that it can reach £62/MWh in 2027, which will actually give us a higher income.

- What will affect the market price of electricity in the coming years?

  The EIC comments on energy price certainty indicate that there are four main drivers that will affect the market price of electricity in the decades to come, which may include:

  • Demand
  • The nature and evolution of the UK fuel mix
  • The development of the carbon market
  • Infrastructure development

  Their overall conclusion is that electricity prices are set to rise in the next two decades, however it will be a very volatile market as it will be buffeted by conflicting drivers.

APPENDIX B

– Eco Impact Checklist

Title of report: Avonmouth Wind Turbines Project
Report author: Strategic Director - City Development
Anticipated date of key decision: 25 March 2010

Summary of proposals:
There are a number of options for procuring the wind turbines, as identified in paragraphs 9 to 13.

This Eco Impact Assessment summarises the findings of the environmental impact of the development of the turbines which were considered in a formal Environmental Impact Assessment and in the determination of the planning application.

Will the proposal impact on...	Yes/ No	+ive or -ive	If yes...	
			Briefly describe impact	Briefly describe Mitigation measures
Emission of Climate Changing Gases?	Yes	Positive	The wind turbines will reduce emissions in the coming decade.	
		Negative	In the short-term, there will be emissions from the use of energy and materials during manufacture, transportation and construction works.	A Traffic Management Plan will be adopted during construction to address transportation issues.
Bristol's vulnerability to the effects of climate change?	Yes	Positive	The wind turbines will contribute to the city's energy security for the future.	
		Negative	The EIA established the site as at risk from a 1 in 200 year tidal flooding, due to the adjacent Severn Estuary.	The wind turbine development will be specifically adapted to cope with a 1 in 200 year tidal flooding, as outlined in the EIA. Sustainable Urban Drainage will be implemented to manage excess surface water run off on the site.

Consumption of non-renewable resources?	Yes	Positive Negative	The wind turbines will reduce the consumption of non-renewable energy in the coming decade. In the short-term, there will be a requirement for fossil fuels and other non-renewable materials and products for the manufacture, transportation and construction of the turbines.	The procurement of contractors, materials and equipment should meet the requirements of BCC's Sustainable Procurement Strategy.
Production, recycling or disposal of waste	Yes	Positive Negative	Once operational, there should be limited waste production on site. In the short term, waste will be produced from the manufacture and construction of the turbines.	Site Waste Management Plans will be adopted during the construction of the turbines.
The appearance of the city?	Yes	Positive / Negative	The turbines will alter the character and visual amenity of the landscape. However this is a subjective point, but to some they may add to the visual amenity of the area.	The full visual impact has been addressed through the EIA. Although noticeable, the turbines will not be visually intrusive.
Pollution to land, water, or air?	Yes	Negative	The site is known to be contaminated with hydrocarbons. In the short term, there are potential pollution issues surrounding the construction of the turbines.	As a condition of the planning permission, an Environmental Management Plan will be adopted to reduce pollution to the site.
Wildlife and habitats?	Yes	Positive / Negative	The site currently supports a rich variety of wildlife & plant species which may be affected by the turbines. This issue forms part of the submission of the Environmental Impact	The project design avoids ecologically sensitive areas. During the construction phase, the site will adopt an Environmental Management Plan, which will ensure

			Assessment in the planning application, which has now been approved.	construction activities do not damage habitats and fauna. Once construction is complete, a long term Environmental Management Plan will be adopted to monitor and safeguard bird populations.

Consulted with: Alex Minshull, Antony Lyons and Tanya Saker

Summary of impacts and Mitigation - <u>to go into the main Cabinet/ Council Report</u>

The environmental impact of the development of the turbines has been considered in a formal Environmental Impact Assessment and in the determination of the planning application.

The decision in this paper is for the procurement model rather than the decision to develop the wind turbines. There are no significant differences in the environmental impact of the four options.

The City Council owning both turbines is likely to give the Council greatest control of the carbon credits in the future and offers the greatest financial advantage.

Checklist completed by:

Name:	Paul Isbell
Dept.:	Energy Management Unit, City Development
Extension:	24430
Date:	3 March 2010
Verified by Environment and Sustainability Unit	Sustainable City Group

APPENDIX C

Financial Assumptions

Assumption	Used in Report	Probable Position
Amount of electricity generated	12,600 MWh	17,600 MWh
Capital Cost of Scheme	9,400K	8,000K
Cost of Borrowing	5.5%	5.5%
Value of ROC	£45.50	£55 by 2017
Sale Price of Electricity	£89/MWh	Likely to increase by up to 20% in short term eg. £107/MWh

Cause	Increase in NPV
1. Output is very understated: - Effect if output is changed to match comparable turbines which produce an extra 5,000 MWh per year	• 6.9
2. The base Energy price in the model has not been inflated during the life of the project - Effect if electricity prices are inflated by 1% p.a. - Effect if electricity prices are inflated by 2% p.a. - Effect if electricity prices are inflated by 3.5% p.a. (to match the inflation rate used when discounting)	1.5 3.2 • 6.2
3. Contingency set at 25% - this may be too high - Effect if only 10% contingency is needed	• 1.3
4. The costings assume borrowing is spread over 25 years – it would be cheaper to pay back the borrowing as quickly as possible - Effect if borrowing is paid back as quickly as possible	• 1.2
5. All costs assume worst case (most expensive) scenario - Effect if recorded at more realistic (cheaper) prices	• 1.1
6. The Electricity price has been set very low in the model - Effect if set to current actual electricity prices	• 1.7
Total	• 18m