



COUNCIL CABINET 18 December 2007

Report of the Cabinet Member for Personnel, Performance
Management and Economic Development

Longbridge Weir Hydro Electric Power Station

SUMMARY

- 1.1 A detailed study has been carried out by specialist consultants and a report prepared which shows that the building of a hydro-electric power station adjacent to Longbridge Weir is both feasible and will generate sufficient revenue income to be self funding using unsupported borrowing.
- 1.2 Building and operating this power station would save as much as 1000 tonnes of CO2 annually compared with current supplies. The Council's 25% emissions reduction target equates to a saving of approximately 6000 tonnes of CO2 resulting from Council electricity and gas consumption, excluding street lighting. So this one project could achieve as much as one sixth of the necessary reduction.
- 1.2 Subject to any issues raised at the meeting, I support the following recommendations.

RECOMMENDATIONS

That Council Cabinet:

- 2.1 Recommends to Council to approve unsupported borrowing of £1.5 million to fund the design, procurement and construction costs subject to the project achieving planning permission and the various Environment Agency permissions.
- 2.2 Recommends to Council to approve the associated changes to the Council's prudential indicators to reflect the necessary revisions to the capital programme and unsupported borrowing, subject to further detailed confirmation when these indicators are next updated.
- 2.3 Authorises the Corporate Director of Resources to establish appropriate internal controllable recharges between budgets to ensure that corporate costs are directly offset against associated financial savings and income.
- 2.4 Waives contract procedure rule C15, Requirement to Obtain Quotes or Tenders, and appoint specialist consultant Derwent Hydro for the technical aspects of the project.
- 2.5 Establishes the hydro-electric power station as a venue for the proposed Time Trail.

REASONS FOR RECOMMENDATION

- 3.1 Building this power station would be a significant statement to the people of Derby and others that the Council means business on tackling climate change.
- 3.2 As much as 1000 tonnes of CO2 could be saved every year. This represents a sizeable proportion of the overall target reduction for electricity and gas emissions.
- 3.3 The income generated from sale of the renewables obligation certificates (ROC's), the sale of the surplus power and the value of The Council House power demand offset by directly feeding the station output into The Council House will support the borrowing. The scheme long term viability is dependent upon the ongoing availability of ROC's or their equivalent.
- 3.4 As the unsupported borrowing is not in the capital programme, the constitution requires that the decision be made by full Council.
- 3.5 There are few consultants capable of carrying out the technical hydro engineering design aspects of such an installation. Derwent Hydro has a track record in such schemes and has been involved from the start of this project. The design fee, at approximately £20 000, is considered to represent good value for money.
- 3.6 It is intended that the hydro power station becomes a tourist and educational venue.



COUNCIL CABINET

DERBY CITY COUNCIL

Report of the Corporate Director - Corporate and Adult Services

Longbridge Weir Proposed Hydro Electric Power Station

SUPPORTING INFORMATION

- 1.1 The 17 April Cabinet report covering the Local Authority Carbon Management Programme Strategy and Implementation Plan mentioned the (then) undeveloped plan for a hydro electric power station.
- 1.2 The appointed consultant, Derwent Hydro, has now completed the feasibility study and this shows the scheme to be deliverable and affordable through unsupported borrowing. A business case which summarises the consultant report and supports the prudential borrowing request is attached at Appendix 2. The financial viability of the scheme is dependent upon the long term availability of Renewables Obligation Certificate's (ROC's) or their equivalent. The Renewables Obligation is a Government initiative to encourage more renewable electricity generation and is an electronic certificate based scheme. One certificate (known as a Renewable Obligation Certificate or ROC) is issued for each megawatt hour (MWh) of renewable electricity generated. Whilst the long term future of ROC's is not assured, following a discussion with Ofgem, the issuer of ROC's, it is believed that ROC's or their equivalent will be available for the financing period of this project and their value, whilst not assured, is also likely to remain as demand for renewable generation is expected to exceed supply for this period.
- 1.3 It is intended that the Council will operate the power station and will buy in specialist help when it is needed. To do this the running cost component of the income, some £20,000 annually, will need to be transferred into the Corporate maintenance budget.

1.4 The benefits of the scheme are as follows:

- Forecast initial annual revenue income of at least £128,300 once fully operational. This figure includes the value of Council House power demand offset, income from sale of Renewable Obligation Certificates (ROC's worth approximately 4p/kWh), surplus power and the value of climate change levy not having to be paid on power absorbed by the Council House (worth approximately 0.45p/kWh). This figure is likely to rise over time as electricity prices increase and ROC's value increase. Inflationary increases in electricity prices mean that the project will be able to repay initial costs with interest over the operating period.
- As much as 1000 tonnes per annum of CO2 emissions offset through displacement of coal fired power generation, the closest power station to Derby being the coal fired Ratcliffe on Soar power station.
- Educational possibilities for local and surrounding schools.
- Tourist attraction – there are few city centre hydro electric plants or fishpasses in the UK.
- High profile evidence of Council commitment to the environment.
- Anticipated average of 1,300,000kWh of power generation annually.
- Potential linkage with the proposed Public Realm funded time trail where the hydro station could be the site of one of the timepieces further enhancing its status as a tourist attraction – especially if the piece were water powered.

A draft layout plan is included at Appendix 3

1.5 The Corporate Director of Regeneration and Community has advised that there are some implications for local plan policy and the Riverlights development which need to be weighed against the benefits of the scheme. In summary, the local plan policies are:

- L1, the protection of parks and public open space. Part of the Riverside Gardens would be affected and reduced in size. Only proposals are allowed which are associated with the provision of leisure or recreational uses, unless it is shown there is a surplus of open space. The Environment Agency has requested that the scheme include a fish pass and have volunteered to carry out the detailed design of this feature themselves. A fish pass could become a place for people to visit in addition to the power station itself.
- E4, an assessment of impact on nature conservation.
- E10, the need to reduce the net use of energy. Planning permission will be granted for renewable energy developments if the proposal would not have a material adverse effect on the natural environment and the benefits outweigh any adverse effects.

- 1.6 The scheme will have an impact on the Riverlights development. There will be a smaller area of Riverside Gardens available for Riverlights patrons to use. The views from the apartments across the gardens and over the weir will also be affected. It will therefore be important that the scheme is designed to a high standard to minimise this impact. Property Services Architects will provide the required design input. The budget included within the scheme proposal for the powerhouse construction has been increased substantially in recognition of this need. The intention is to include the powerhouse as a suitable destination of the proposed Time Trail. Further financial support for the quality of the design could therefore be available from the Council's Public Realm budget.
- 1.7 The pedestrian route under Holmes Bridge is an important route through to Bass's Recreation ground, more important now that the highway changes have been made and the road is more difficult to cross. Natural surveillance will be important in making the route safer to use, and therefore the location of any building will need to be carefully considered.
- 1.8 The potential of a new pedestrian bridge across the river has still to be investigated but the location and size of any building could affect the location/viability of a bridge.
- 1.9 Access arrangements for the construction and maintenance of the plant have yet to be finalised. Ideally any access requirements will be co-ordinated with landscaping work in the River Gardens to be carried out as part of the Cathedral Green project and / or the Riverlights development. A provisional sum has been included to cover access requirements.
- 1.11 To minimise exposure to financial risk it is proposed to apply for outline planning consent as soon as possible after Cabinet approval and to follow this with applications to the Environment Agency for abstraction licence and building in the flood plain approval. The Environment Agency has been consulted on the proposals. A ground survey will be carried out at an early stage to confirm the route and depth of an 11kV cable which leaves the river adjacent to the bandstand in the River Gardens and hence may affect the scheme. Fees and associated costs 'at risk' in seeking these approvals are estimated to be in the region of £15,000.
- 1.12 It is proposed to use in-house design resources as far as possible in the delivery of the project. Both Architects and Engineering Design are keen to take on the project but the hydro engineering expertise will have to be outsourced. It is proposed to appoint Derwent Hydro as specialist consultant since their fee proposal of £20,000 is both reasonable and low enough to enable a waiver of CPR15 to be sought. Continuity is important and specialist consultants in this area are few. Derwent Hydro are local, suitably experienced and come well recommended by other authorities they have worked for in the recent past.
- 1.13 The outline project milestones are set out below. The specialist consultant considers these to be achievable but they are ultimately dependent upon the scheme achieving planning permission and the necessary Environment Agency permissions.

Task	Start	End
Cabinet Approval	18 Dec 2007	18 Dec 2007
Appointment of professional team	2 Jan 2008	15 Jan 2008
Design work including ground survey	15 Jan 2008	15 Sept 2008
Permissions and approvals	15 Feb 2008	15 May 2008
Tender action	15 Sep 2008	31 Oct 2008
Analysis, appointment, mobilisation,	1 Nov 2008	30 Nov 2008
Construction	1 Dec 2008	1 Marc 2010
Commissioning	1 Mar 2010	31 Mar 2010
Operation	Apr 2010	Ongoing

OTHER OPTIONS CONSIDERED

- 2.1 Investigations are under way to look at the feasibility of a similar, albeit smaller, scheme at Darley Abbey weir. Other weirs will be investigated in due course and reports brought to Cabinet as appropriate.
- 2.2 The possibility of building the Longbridge scheme on the opposite bank has been considered but discounted because the civil engineering costs were felt to be prohibitive compared to those for the South Bank of the river.

For more information contact: Tim Findlay 01332 255070 e-mail tim.findlay@derby.co.uk
Background papers: Derwent Hydro Feasibility report.
List of appendices: Appendix 1 – Implications
Appendix 2 – Business Case
Appendix 3 – Draft layout plan

Appendix 1

IMPLICATIONS

Financial

- 1.1 The funding for the feasibility work carried out so far has come from the Pump Priming Fund.
- 1.2 The scheme cost is forecast to be £1.5M with an anticipated annual income generation of around £148,000 less operating costs expected to be around £20k per year. All funding is to come from Prudential borrowing. No allowance has been made for a Time Trail feature. Such a feature would be funded from the Public Realm budget.

	2007/08	2008/09	2009/10
Construction Costs inc fees	£15,000	£760,000	£725,000

- 1.3 The ongoing revenue implications including the financing costs of the unsupported borrowing will be met from the income generated from sale of surplus power (to another Council site if possible) , sale of Renewables Obligation Certificates, value of climate change levy not paid and from the savings to the Council House electricity bill.

	2007/08	2008/09	2009/10	2010 and on
Cost of borrowing	£1,173	£60,605	£117,300	£117,300
Running costs			£20,000	£20,000
	£1,173	£60,605	£137,300	£137,300
Value of income	£0	£0	£0	£128,300
Total surplus	(£1,173)	(£60,605)	(£137,300)	(£9,000)

- 1.4 The project should achieve an operational surplus by year 5, and should achieve full payback before 25 years assuming the cost of electricity and value of ROC's continue to increase at the rate of inflation. If they exceed this level then the payback will be shorter. The expected life of the scheme is in excess of 50 years. A major refurbishment at 25 years if required would be funded by further borrowing or reserves generated from any surpluses in the later years of the first 25 year period. The main risk to the funding being sustainable is the continued availability of ROCs which comprise around £53,000 a year of the income. It is expected that these or similar payments will continue into the future. Should this not be the case, then the project would face a significant deficit. This risk is considered remote.
- 1.5 The running cost amount of £20,000 annually will need to be transferred from income into the Corporate Maintenance budget. £5000 of the running cost included is for managing the applications for and sale of ROC's and the transmission of the surplus power to another Council site.
- 1.6 The fees 'at risk' (£15,000) can be funded from the Climate Change Action Programme budget subject to Board approval.

Appendix 1

Legal

- 2.1 The proposed scheme will be subject to planning permission in the usual way. In addition an abstraction licence and permission to build within the river flood plain will both need to be granted by the Environment Agency before the scheme can commence on site.
- 2.2 The Council already owns the proposed site. Both Derby Cityscape and the Riverlights developer have been consulted on the proposal.
- 2.3 The public sale of ROC's will need to be managed as will any arrangements for transmitting the surplus power to another Council site.

Personnel

- 3.1 No issues directly arising from this project are anticipated.

Equalities impact

- 4.1 None

Corporate priorities

- 5.1 If built the proposed power station and its use as a possible time trail site will contribute significantly to the 2007 – 2010 corporate priorities of
 - **Leading Derby towards a better environment.**, with the outcomes of **reducing level of carbon emissions and raising awareness on climate change**
 - **Giving you excellent services and value for money**, with the outcome of **increasing value for money.**
 - **Introduce the structures and support needed to deliver new ways of working.**
 - **Develop and upgrade the City centre**