EAST HERTS COUNCIL

PERFORMANCE, AUDIT AND GOVERNANCE SCRUTINY COMMITTEE – 22 MAY 2018

REPORT BY THE EXECUTIVE MEMBER FOR ENVIRONMENT AND PUBLIC SPACE

HERTFORD HYDRO – REVISED COSTINGS AND BUSINESS CASE

WARD(S) AFFECTED: HERTFORD CASTLE

Purpose/Summary of Report

- The project to construct a micro hydro power scheme at Castle Weir, Hertford, has been in the capital programme for some time, with a number of difficulties experienced in progressing the scheme to completion. Given the time period that has now passed it is suggested that it is appropriate to revisit the scheme, to reconfirm the business case and costings, given the likely effects of inflation. This report sets out the current business case and updates costs based on inflation.

RECOMMENDATIONS FOR OVERVIEW AND SCRUTINY **That:**	
(A)	**the Committee consider the revised business case and pass any comments to the Head of Housing and Health;**
(B)	**the Committee consider the proposed revised timetable and pass any comments to the Head of Housing and Health, and;**
(C)	**the impact of the proposals on the Council's carbon reduction and sustainability targets be considered and that any comments are passed to the Head of Housing and Health.**

1.0 Background

1.1 The project to construct a micro hydro scheme adjacent to Castle Weir, Hertford was first approved by the Executive at its meeting on 1 December 2010 and reconsidered in 2012 to take account of additional local planning requirements and to include a more powerful 15kW hydro system. A sum of £211,000 was agreed of which £200,980 remains within the capital programme.

1.2 The scheme was seen as attractive based not only on the business case (payback was originally calculated at 7.4 years) with guaranteed government feed-in tariff payments receivable over a 20 year period but also for its associated educational, environmental and carbon reduction benefits. The project has to date generated community interest and public support. In terms of educational benefits it is believed that it will provide a valuable case study for local schools, since hydro power remains relatively unusual. As part of the scheme interpretation boards and real time energy meters both inside the theatre and externally adjacent to the hydro site are planned as part of the works.

1.3 A detailed planning application was submitted in 2012, which remains on hold following difficulty in obtaining consent from the Environment Agency (EA). It is not unusual for hydro schemes to take some years to progress through the EA consent process. However, such consent issues were latterly exacerbated by the council's decision to automate the weir gates in the adjacent river channel, causing the EA to link the two projects, to the detriment of progressing the hydro project.

1.4 Officers believe that now is an opportune moment to reactivate the scheme and if possible progress it through to completion. This is for a number of reasons.
First the necessary operational protocols for the weir gates have been confirmed, meaning that it is possible to undertake

the required combined flood modelling work. Secondly, the EA in collaboration with the Countryside Management Service is developing a project to develop fish and eel passes at several sites on the River Lea in East Herts, including at the proposed site for the hydro. As part of the plan for the hydro detailed designs for the creation of an eel pass have been included within the scheme and it is believed that this can be incorporated within the new EA project and thus potentially allow joint collaboration in terms of the flood modelling which the EA will also be required to undertake as part of its own project proposals at the Castle Weir site. Thirdly, next year sees the termination of the Government feed-in tariff payment scheme, which pays a given sum for each unit of energy generated by renewable energy schemes. Whilst the hydro business case potentially would remain viable even without tariff payments, clearly their availability ensures it is more attractive. Finally, the priorities emerging from the work of the Climate Change Task and Finish Group confirm the importance of the Council achieving its carbon reduction goals and climate leadership role. The Hertford Hydro scheme is an important example of both and will help assist in achieving the proposed national target of a 30% reduction in carbon emissions by local authorities from their own estate (proposed in the Government's Clean Growth Strategy, 2018).

2.0 Capital Implications

2.1 It is expected that the Hertford micro hydro scheme will generate in excess of 85,000kW of electricity per year in normal conditions. This will be used to supply energy to Hertford Theatre, and will meet around 40% of the energy use of the building.

2.2 The business plan for the project has been updated to take account of:

- the cost of the turbine uprated by inflation, pending an updated quote from the manufacturer;
- EA, planning and other fees;

- an allowance for flood modelling (at the upper end of estimates so as to be prudent. However, it is possible that the joint Countryside Management Service/EA fish and eel pass project mentioned in section 1.4 could mean that this full modelling allowance may not be required;
- a contingency budget.

This gives a total revised estimated capital cost of £252,359. This is excess of the £200,980 currently held in the council's capital programme for the hydro scheme. Thus, the council could be required to identify an additional £51,400 to proceed if full modelling costs are required Should this be the case further formal approval will be sought if necessary.

2.3 A revised project plan for the hydro scheme is shown in **Essential Reference Paper "B"** . This takes into account the EA eel/fish pass project which is currently underway. In essence it is anticipated that the fastest project timeframe could be:

May-August 2018- EA Fish/eel feasibility+ EA flood modelling
October 2018 – Project start
End October 2018 – formal submission to EA
Start December 2018 – Planning application submitted
End December 2018 – EA licences obtained
Start February 2019 – Planning consent achieved
Procurement to run in parallel with planning
February 2019 – Works commence
May 2019 – Project complete and hydro commissioned

3.0 <u>Revenue Implications</u>

3.1 Since the original project inception, various revenue costs and income figures have changed:

- unit costs for electricity used at the Theatre have increased. This means the efficiencies of using electricity generated by the hydro would have a positive impact on the council's energy costs;
- the export tariff (a sum receivable for 75% of all electricity produced by the hydro) has risen. This has a positive impact on the business plan;
- the basic feed-in tariff (a sum receivable for each unit of energy generated by the turbine) has fallen considerably. This has a negative impact;
- energy use at the Theatre is also currently less than in the past (a 3 year average of 217,000kWhrs).

3.2 Both the feed in-tariff (7.77p kWhr) and export tariff (5.03p kWhr) payable to the Council by the Government for hydro power generation would be guaranteed for 20 years and index linked by RPI each year. Note these tariff sums are expected to rise this month in line with inflation, but all the figures quoted in this report utilise the tariff payments shown above.

3.3 As well as payments for electricity generated, indicated above, approximately 40% of the theatre's average power demand should be met by the hydro. It is estimated this will result in savings of approximately £9,409 per annum at current energy prices. It is worth noting that whilst savings of 40% have been assumed at night, due to the low energy demand at that time it is likely that in reality 100% of power requirements can be met by the hydro. This would result in further savings of approximately £1,325 per year, although this sum has been excluded from the calculations to aid comparison with the original business case.

3.4 From these sums it is possible to calculate that the total annual energy savings derived from the hydro scheme are £19,221 (excl VAT) giving a simple payback figure of 12 years based on a capital sum of £231,359 or 13.1 years based on £252,359 should the full commitment for flood modelling be

required.

3.5 The annual saving of £19,221 represents over 80% of the average annual electricity costs of £23,500 for Hertford Theatre.

3.6 As noted above RPI index linked tariff payments are receivable by the Council for 20 years from the date that the hydro is fully commissioned. Taking this into account, together with annual maintenance costs of £800 and assuming inflation at 2%, over the full 20 year period a **total net income of £447,565** would be generated. This equates to a **surplus of £216,206** over the initial capital cost. (Note: these figures exclude £21,000 for flood modelling.) This represents an internal rate of return on the council's use of its capital of 6.8% for the first twenty years. **Essential Reference Paper "C"** details the full 20 year business plan.
As the hydro turbine is mechanically relatively simple, typical life expectancy of similar turbines are reckoned to be in the region of 50+ years. Clearly after Year 20 no tariff payments will be received, however, the turbine would be expected to continue to generate electricity thereby partly offsetting energy costs for Hertford Theatre into the future.

4.0 Summary

4.1 The educational and environmental benefits, along with community interest in the Hertford Hydro scheme remain important. Financially the project is also viable. Based on the estimated capital cost up-rated for inflation of £231,359, the potential efficiencies in current electricity expenditure, coupled with the income deriving from the hydro scheme, mean that payback of the capital should be achieved in around 11.3 years. After year 12, the minimal maintenance costs mean the council would achieve a net income of between £22,900 and £26,800 a year from efficiency savings and additional income.

4.2 The 20 year business plan sees income net of repayment of

capital over the full period of £216,206.

4.3 Note, should the upper estimated cost (£21,000) for full flood modelling ultimately be required this would mean that pay-back is achieved in 13 years. Approval for these additional costs, beyond that originally agreed within the capital programme, will be sought once known.

5.0 Implications/Consultations

5.1 Information on any corporate issues and consultation associated with this report can be found within **Essential Reference Paper 'A'**.

Background Papers:

Minutes of the meeting of the Executive on 1 December 2010 and 10 January 2012.

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