

PROPERTY SERVICES

Longbridge Weir Hydro Power Station

Business Case



The consultant report concludes that a power station can be built for a recommended budget of £1,100,000. The consultant obtained quotations or budget prices for all of the major work items needed to procure such a power station so the recommended budget has good credibility.

Since the report was produced a few issues have arisen which may increase costs slightly and some underestimates within the report have been identified so the overall budget estimate for the scheme, including a 10% contingency sum and a 9% allowance for future construction cost increases, is now £1.5M

There are few consultants operating in this field and Derwent Hydro are not only local to Derby but themselves operate three hydro power stations at other weirs on the same river so they have good local and appropriate expertise and experience which further adds credibility to their report. References for Derwent Hydro have been taken up with other local authorities they have worked for recently and the responses have been good.

The flow data for the river is available going back decades so the forecast power output and hence income value from the project is also credible and likely to stand the test of time.

The value of the power generated if it were all sold to the national grid is around £100,000 per year at today's rates. If the power is fed into the grid via The Council House so that The Council House directly utilises as much of this power as it can thereby offsetting the need to import power from the grid then the value to the Council of the generated power rises to around £132,000 per year. If the surplus power is transferred to another Council site the total value of the generation rises to around £148,000. These figures have been calculated using historical Council House power consumption and pricing data as well as actual power and ROC (Renewable obligation certificate) sale prices currently achieved by Derwent Hydro themselves from their own power stations. Should the cost of electricity or the value of ROC's rise at any time during the scheme life the income would also rise proportionately.

The scheme balances at a 25 year borrowing period with annual borrowing costs of £117,300. After that time the Council will have a revenue income of the full amount, less operating costs, for the remainder of the power station life, which should easily exceed 50 years.

Should the project cost more than the recommended budget then the borrowing would have to be run over a period longer than 25 years – but this should not present a problem given the anticipated lifespan of the project and its annual income projections.

It is suggested that prudential borrowing of £1.5M is sought initially over a 25 year period but anticipating breakeven before this if the cost of electricity and value of ROC's both rise during the period.

Every day that the hydro power station is in operation 3 tonnes of CO₂ will not need to be emitted from coal fired power stations. The Council total emissions from gas and

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electricity use are around 24,000 tonnes so a 25% cut represents 6,000 tonnes. Building this hydro power station will save 1,000 of the 6,000 target. It gets us 17% on our way – provided the Council can use the entire output within its own buildings.

The Council House annual electricity bill is currently around £65,000 so feeding the power station output directly into the Council House and using the incoming supply cable as the grid connection will mean that the Council House becomes a net exporter of electricity each year even though at times it may still need to draw power from the grid when it is consuming more than the station can generate.

The forecast total income from the station accounts for the amount and value of day and night tariff power that the Council House itself can absorb. The balance is then sold into the grid at around 3.5p per kWh. The actual amount achieved would be subject to a competitive reverse tendering exercise to set up an export contract but will be around 3.5p per unit. If the surplus power can be transferred to another Council site such as QLC for an anticipated fee of 1p per kWh for the carrier then the value of the surplus power rises by around £16,000

All power absorbed by the Council House avoids the need to pay the Climate Change Levy on that power. This has a value of £4.40 per MWh on top of the ROC's value of around £43 per MWh.

Derwent Hydro have confirmed that they expect the turbine to last for at least 50 years without need of major maintenance. The generator bearings and gearbox may need overhauling after 25 years but no other major maintenance costs are anticipated. By the time the gearbox overhaul is needed the project will have paid for itself and be generating substantial sums, part of which could be set aside to fund this work.