

Settle Hydro: generating renewable electricity for the community



The Archimedes screw in place

Renewable energy schemes do not have to be either large scale or micro-projects for single houses.

Schemes are being developed at community level, typically providing energy for tens or a few hundred homes.

Settle Hydro is such a scheme and this case study shows how the local team went about it.

For more information about Settle Hydro, go to: www.settlehydro.org.uk

Project

Settle Hydro is a great example of a project that has been developed by the local community for the local community. It tackles a 21st century dilemma that affects everyone - the search for sustainable energy.

Settle Going Green was established in the market town of Settle, North Yorkshire, with the aims of:

- Being recognised as the 'Greenest' Community within North Yorkshire.
- Being seen as a role model for the achievement of significant 'green' performance improvement through community-led action.
- Making a significant contribution to the regeneration of the local economy.
- Making a significant contribution to the enhancement of community spirit and cohesion.

The project involved installing a 50kW Archimedean screw at Settle Weir, near Bridge End Mill, close to an original waterwheel and used part of the existing millrace.

It will generate about 165,000 kWh (units) of electricity a year - enough for around 50 average houses - saving 80 tonnes of carbon a year or 3,200 tonnes of carbon over its expected lifetime of 40 years. Settle Hydro was established as an 'Industrial and Provident Society for the Benefit of the Community' with the specific purpose of owning the Settle Weir Hydro Electric Scheme. It will generate revenue by selling 'green' hydro-electricity. Any surplus revenue will be used by the society to benefit the local community through its

twin aims of regenerating the local economy and promoting the environmental sustainability of Settle District.

The formation of Settle Hydro was jointly sponsored by StART (the Settle Area Regeneration Team), Settle District Chamber of Trade and Settle Going Green. Its founding directors are Steve Amphlett (chair of Settle District Chamber of Trade), Ann Harding (chair of StART) and Helen Walker (director of h2oPE - Water Power Enterprises), none of whom will receive any financial remuneration from the Society.

Part of the finance for the scheme was raised by selling shares in the society to members of the public. As the funds raised from the share issue are for a public-spirited 'not-for-profit' organisation, any investment in Settle Hydro Ltd is regarded as a social and not a financial investment. The remainder of the required finance has been raised from grants and a bank loan.

Project leads

The StART (Settle Area Regeneration Team) was founded in August 2003 and membership is open to residents of Settle and the surrounding area who have a wealth of knowledge about local issues and an interest in regeneration.

The role of StART is to work in partnership with Yorkshire Forward, Craven District Council, North Yorkshire County Council, Settle District Chamber of Trade and the Town and Parish Councils to deliver the aims and objectives of an Initial Business Development Plan



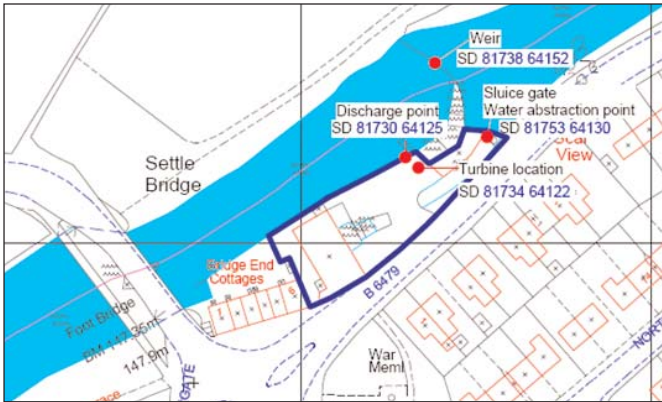
Community Environmental Case Studies

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Location

Settle is a bustling market town in the foothills of the Pennines amongst some of the most picturesque scenery in North Yorkshire. The town has a population of 2,400 and is an important tourism centre.

The powerplant is located in the centre of the town.



Finance

The total cost of the project was £415,000, made up of:

- Equipment and Construction £353,000
- Project Management Fees £30,000
- Consultancy Fees £16,000
- Legal & Professional Fees £15,000
- Other Costs £1,000

The funds were sourced from:

- Grant: Yorkshire Forward £75,000
- Grant: Future Energy Yorkshire £50,000

- Grant: Key Fund Yorkshire £10,000
- Loan: Charity Bank £125,000
- Loan: Key Fund Yorkshire £20,000

Additionally, the share issue raised £135,000. The share offer was launched on 6 September 2008 and stayed open until 15 December 2008. Shares cost £1 each, with a minimum shareholding of 250 shares and a maximum, set by law, of £20,000. 158 people took up shares: 45% invested £250; 45% invested between £250 and £1000; 10% invested between £1000 and £5000.

The annual revenue is forecast to be about £28,000, based on quotations received for generated electricity and from information provided by the Environment Agency.

Pre-tax surpluses are forecast to be around £11,000 to £15,000 per annum from which the directors must meet the obligations of the society. These include loan repayment, tax and a balance between a fair return to shareholders and meeting the social obligations of the society.

Timeline

How long does a project such as this take to realise? Here is the timeline for the Settle Hydro project:

- February 2007 Meeting with David Curry MP
- May 2007 Exploratory Forum
- June 2007 Setting up www.greensettle.org.uk
- July 2007 Launch of Settle Going Green
- August 2007 Approached by Water Power Enterprises (H2OPE).
- July 2008 Formed Settle Hydro Limited
- February 2009 Planning Permission Granted
- March 2009 Abstraction Licence Granted
- June 2009 Start Works
- October 2009 Delivery of Screw

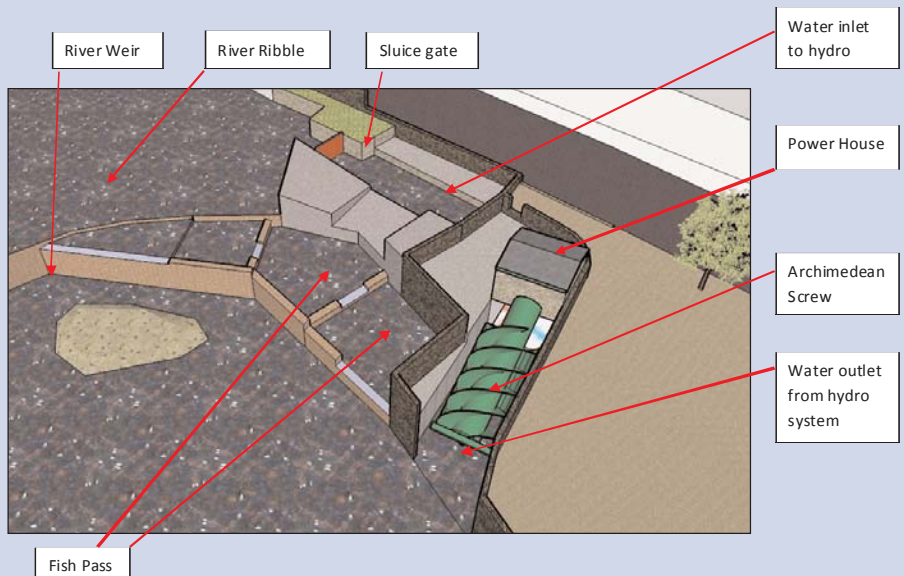
How it works

The Archimedes screw is like the screw in a mincer; it lies at an angle of 22 degrees in a purpose built trench. Water drawn off the river at the sluice gate passes under the power house and then flows down the screw.

The weight of the water turns the screw (at about 28 revolutions per minute). The turning motion generates power inside the power house where the electrical control equipment, generator and gearing mechanism is housed. The water returns to the river at the bottom of the screw.

The control system will only allow water into the hydro system within strict limits laid down by the Environment Agency. Independent evidence, monitored by the Environment Agency, shows that fish can travel down the screw without harm, although there is a 'fish pass' by the side of the water inlet. There are over 40 such schemes on the continent.

There is a 'hierarchy' of water need, set by the Environment Agency. Firstly, the weir must have water flowing over it. Secondly, the fish pass must have water flowing down it. Thirdly, the hydro system will have water travelling through it. If there is not enough water for the weir, the fish pass and the hydro plant together, the hydro plant will shut down automatically.



What works well

The Settle Hydro Scheme has a range of positive benefits for Settle.

1. Cash surpluses from the scheme will be used to fund other environmental schemes within Settle. Settle Hydro will distribute the money through a grant scheme - and the amount is anticipated to be over £250,000 during the 40-year lifetime of the project.

2. The project will significantly raise the profile of Settle and its 'green' credentials with knock-on benefits for the local economy, including the development of green tourism and green businesses. Other community hydro schemes have seen a significant increase in tourism.

3. Settle Hydro has brought a new, locally-controlled business to the town.

4. Craven District, where Settle is located, will lead Yorkshire in the development of community hydro and will act as a role model for other communities in the country.

5. The electricity will be sold commercially to local people - local green energy for local people.

6. The scheme will help Craven District meet 10% of the hydro targets set by Government Office for Yorkshire and Humber.

7. It will help meet one of the five priorities listed by Craven District Council's report on *Creating a Sustainable Future - One Planet Living* which stated that renewable energy generation in the district was close to non-existent, although there is considerable potential for small-scale, localised schemes.

8. Settle Hydro, in conjunction with Settle 'Going Green' will provide an invaluable local, educational resource for local schools.

9. It will generate 180,000 kWh (units) of renewable electricity a year - enough for the needs of almost 50 houses from one small weir.

10. It will save 3,200 tonnes of carbon emissions in its lifetime - the equivalent of 8.9 million car miles.

Further information

Settle Hydro's website and blog is at:
<http://www.settlehydro.org.uk>

Settle Going Green's website is at:
<http://www.greensettle.org.uk/>

Water Power Enterprises - h2ope - has a website at:
<http://www.h2ope.org.uk>

Further information about Settle Hydro is available from Ann Harding on 01729 823155 - email: ann@settlehydro.org.uk



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