



## Reading Hydro CBS Ltd– PIONEER SHARE OFFER

### SUMMARY

Reading Hydro is a Community Benefit Society, that has an ambitious plan to build a hydro-electric scheme at Caversham Weir, and operate it as a community-owned asset. We have secured permissions to install an Archimedes Screw type turbine. It is proposed to change the technology and install Venturi-Enhanced Turbine Technology (VETT), which is less obtrusive and more cost-effective. Once installed, we expect the turbines to generate 300 - 400 MWh of renewable electricity annually, for decades to come.

Reading Hydro is seeking capital from investors to enable us to secure the necessary permissions for the new technology, agree the technical design and the costs of construction, and to raise the finance to build and commission the system. We are seeking to raise an initial target of £15,000, up to a maximum of £30,000

Shares in Reading Hydro CBS are withdrawable shares, known as Community Shares. They cannot increase in value, be sold on or transferred. Pioneer investors are invited to purchase a minimum of 25 ordinary shares at £1.00 each, to provide pre-development finance for Reading Hydro. This investment is at risk, as the society will not have the funds to repay investors if the turbines are not built and commissioned. **You could lose some or all of the money you invest**, without recourse to the Financial Services Compensation Scheme or the Financial Ombudsman.

### DESCRIPTION OF THE PROJECT

Reading Hydro Ltd is developing a hydropower scheme on the River Thames by Caversham Weir and View Island in Reading.





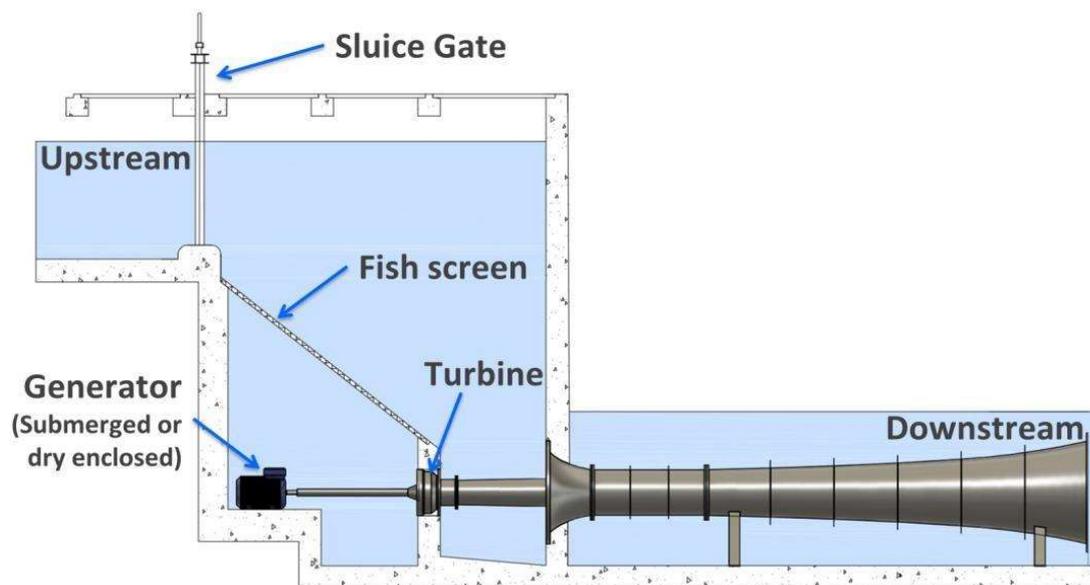
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A public footpath runs across the weir, along an embankment to View Island, and the hydro-electric plant will run under the footpath on the embankment, producing a sustainable and unobtrusive source of renewable energy from the river.

An abstraction licence, impoundment licence, and fish pass approval were granted for Archimedes Screws in February 2016, with planning permission granted in May 2017. It is proposed to change the technology and install Venturi-Enhanced Turbine Technology (VETT).

Venturi-Enhanced Turbine Technology (VETT) has been proposed by Reading Hydro in place of the Archimedes Screw Turbine. VETT can generate hydropower from fluvial flows with a 1-3 m head (pressure) drop. It has been proven safe for fish passage in micro hydro applications and been approved by the Environment Agency's National Team.

VETT passes 80% of the design flow through a venturi which amplifies the pressure across a turbine. The turbine passes the remaining 20% of the flow but at an amplified pressure drop. As a consequence, the turbines are much smaller and cost effective.



**VETT design showing content of buried intake structure.** *There will be no change to the structural integrity or operation of the weir, navigation lock or sluice gate.*

The installation is designed to be visually unobtrusive as the generation equipment is submersed and sits below the downstream water level. The top of the intake structure is level with the upstream ground level. Debris and fish screening is built into the intake structure.

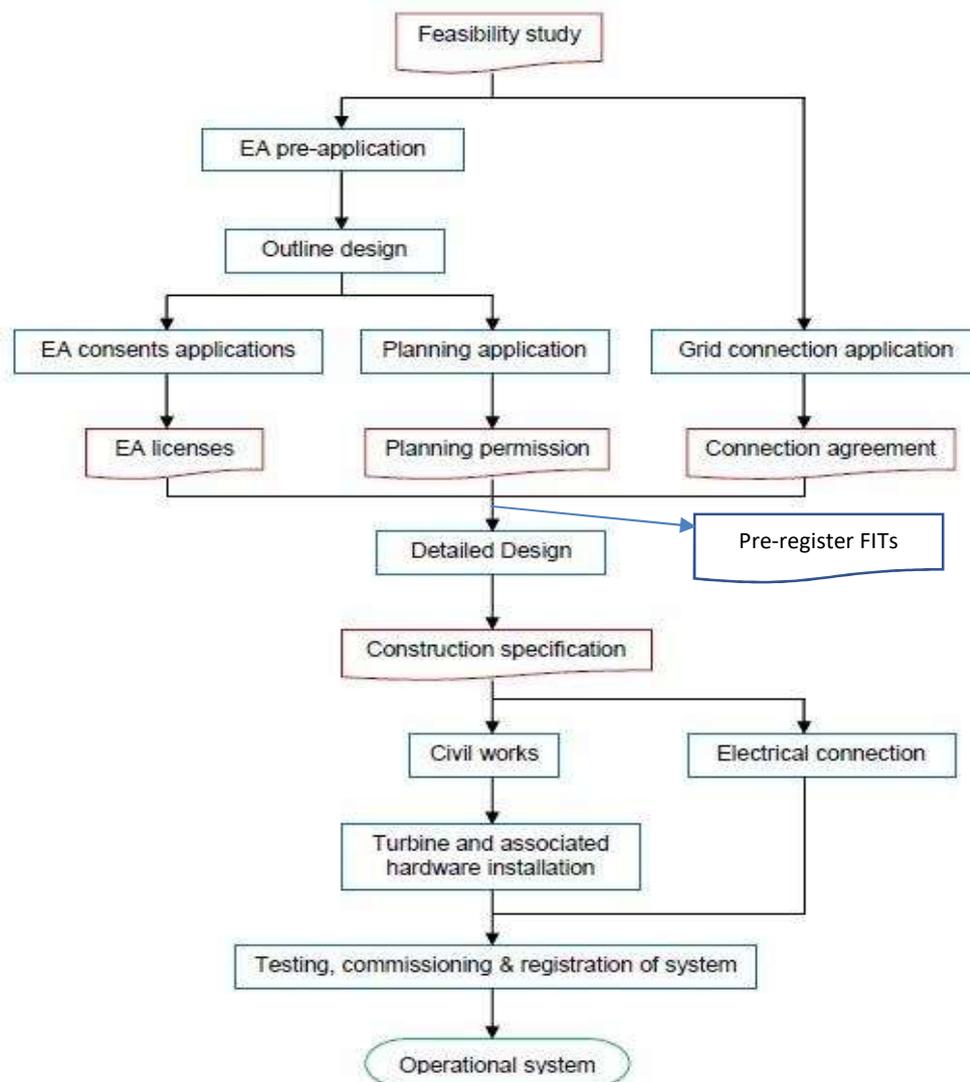


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The initial design for Reading Hydro is to install two turbines, with a total capacity of 44.8 kW, which will operate with a flow through the turbines between 5.24 m<sup>3</sup>/s and 8.0 m<sup>3</sup>/s. The turbines will be shut down in times of very low flow or flood, but should still operate for 90%-95% of the time, and generate about 262,000 kWh annually.

Reading Hydro has applied for planning permission for the project from Reading Borough Council (ref 181100), a grid connection from SSE, and is in discussion with the Environment Agency over abstraction, impoundment and flood defence licences. Once these have been granted, we will seek Preliminary Accreditation from Ofgem, and receive a tariff guarantee (see **FINANCES** below).

The process involved in designing, constructing and commissioning the turbines is shown below.





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We need to commission a concept design and cost estimate for the civil works, which should provide a '50% estimate' - ie: actual cost within +/- 50% of estimate. Combined with the technology, fish pass and development costs, this will establish the financing requirements for the turbine, and the potential returns available. It is possible that the costs will be prohibitive, and the project would not proceed. **This would mean that any money invested could not be repaid.**

We estimate that construction of the turbines and commissioning them to generate electricity will take around six to nine months, ideally with the work taking place over the summer when water levels are generally lower.

### FINANCES

Development costs incurred to date amount to £2,930, financed by donations and loans of £1,430.

The financial model for Reading Hydro assumes that the electricity generated will be eligible for the Feed-in tariff (FITs), which is guaranteed to rise with inflation for the next 20 years. The society would be paid for generating renewable energy, at about 8p per kWhr, and for the power exported to the grid, at 5.24p per kWhr.

If all our estimated generation of 262,000 kWhr was exported to the grid this would generate an income of about £34,800 in year one, increasing with inflation each year for the next 20 years.

The government has announced its intention to end the generation tariff on the 31 March 2019, and is consulting on plans to end the export tariff as well. The regulator, Ofgem, has a procedure which allows generators to apply for Preliminary Accreditation for their site, which guarantees the tariff level, as long as the site is commissioned within a certain "validity period". Reading Hydro, as a community organisation, would have 30 months from pre-registration to commission the site.

Ofgem has confirmed that Reading Hydro would be eligible for FITs if Preliminary Accredited by 31 March 2019. ["For example, if you applied for ROOFIT Preliminary accreditation on the 31<sup>st</sup> March 2019 the latest a Hydro installation could be commissioned and receive FIT tariff support would be the 30<sup>th</sup> September 2021"](#) To get Preliminary Accreditation, Reading Hydro needs to have secured planning permission, an agreement for a grid connection, and an abstraction licence, impoundment licence and flood defence consent (environmental permit) from the Environment Agency.

The Feed-in Tariff guarantees an income for 20 years, in order to cover the increased costs of installing renewable energy generation. Reading Hydro has the option to supply power to other customers, such as local businesses, for a higher price than the export tariff rate of 5.24p, using a Power Purchase Agreement (PPA). There are significant users of electricity nearby, so anticipate that 7p is the



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minimum achievable. After 20 years, the FIT will expire, but the turbines will still be generating, so we will expect to sell power on the open market. We anticipate that the turbines will generate for 40 years, generating approximately 10.48GWhrs, and displacing 131 tons of CO2 each year.

### SHARE OFFER

As a pioneer investor in Reading Hydro CBS you would purchase a minimum of 25 ordinary shares at £1.00 each, and become a member of the society. This gives you the same voting rights as any other member (one member, one vote), regardless of their shareholding, and the right to receive information about the progress of the society.

Shares in Reading Hydro CBS are withdrawable shares, known as Community Shares. They cannot increase in value, be sold on or transferred. If and when Reading Hydro CBS generates an income, we expect to pay a fair rate of interest on the shares, and it may be possible to withdraw the shares, and get your money back. Repaying members will only be possible if it does not undermine our objectives as a community benefit society. **As this investment is at an early stage of the business, it is extremely unlikely to be repaid if we are unable to install and commission the turbines.**

In order to finance the installation and commissioning of the turbines, we intend to issue a larger Community Share offer in 2019, seeking investment of between £400k and £800k. If this share offer is successful, the terms and conditions around withdrawal and interest payments would apply to pioneer investors shareholdings. At this point the society would pay interest in shares to Early Bird pioneer investors, at a rate of 10% (ie one additional share for every 10 held).

The pioneer share offer will open on 30th November 2018, and will remain open for 4 weeks, or until the maximum capital target is reached, whichever is the sooner.

When the share offer closes, all funds pledged will be drawn down and the Directors of Reading Hydro CBS will review applications for membership, agree them as appropriate and issue share certificates. Any applications for membership that are not agreed will have money returned in full.

The rules of Reading Hydro CBS will be available at [hydro.readinguk.org](http://hydro.readinguk.org) or email [reading.hydro.cbs@gmail.com](mailto:reading.hydro.cbs@gmail.com) for a copy.



# Reading Hydro CBS Ltd– PIONEER SHARE OFFER

## Reading Hydro Membership Form

Reading Hydro is a Community Benefit Society (CBS); a business run democratically by its members whose profits are used for the benefit of the community.

Return this form to apply to become a member of Reading Hydro and shares in the society. As a member, you agree that:

- You support the objectives of the Society, and agree to abide by the rules, participate in general meetings and take an active interest in the operation and development of the Society and its business.
- You accept that it is a duty of Members to respect the confidential nature of the business decisions of the Society.
- You apply for [number] shares in the society at £1 for each share

Family name:.....

Given name:.....

Email:.....

(email is our normal way to communicate - if you can't give an email please give a phone number)

Postal address .....

.....

Postcode: .....

Signature:.....

Date: .....

THANKS FOR CHOOSING TO JOIN US! YOU CAN RETURN THIS APPLICATION TO:

- **Posting to:** Reading Hydro CBS, c/o RISC, 35-39 London St, Reading RG1 4PS
- **Email:** Email us a signed and scanned copy to [reading.hydro.cbs@gmail.com](mailto:reading.hydro.cbs@gmail.com)
- **Payment** can be made via Crowdfunder, cheque or bank transfer.

Under data protection law, we will hold the above data on you for as long as you are a member, for the legitimate interest of carrying out the business of Reading Hydro CBS Ltd, RS007212. We will use it for no other purposes. The data is confidential to directors and will never be shown or given to anyone else. Members have a subject right of access to know what personal data we hold on them. You should email [reading.hydro.cbs@gmail.com](mailto:reading.hydro.cbs@gmail.com) if you wish to resign your membership or have a complaint. If you cease to be a member, we will continue to hold your full name, roles held with dates, date of ceasing to be a member and (if known) your reason for ceasing to be a member, but delete all other information.

For office use:

Application accepted: .....

Membership number: .....