

**Derwent Hydro Developments** is a specialist mini-hydro engineering company.

It was founded by Jon Needle and Oliver Paish to meet the growing demand for experienced hydropower engineers to work alongside site-owners and project developers to realise new water power schemes, or refurbish old ones.

The areas of expertise covered by Derwent Hydro include:

- site survey, feasibility analysis and scheme design
- assistance with license and planning applications, grid connection, sale of electricity, and all aspects of scheme operation and maintenance
- installation and commissioning
- renovation and upgrading of old turbines
- research and development of innovative turbine designs

Much of the experience at Derwent Hydro has been gained during the development of sites now owned and operated by a sister company, Derwent Hydroelectric Power Limited (DHPL). Founded in 1988, DHPL operates and maintains 900 kW of plant, selling into the UK grid. DHPL is also a registered installer to the government's **Clear Skies** programme.

As a result Derwent Hydro has in-depth experience of all the technical and non-technical issues to be resolved during a small hydro development. In particular, a key element of our approach is to find innovative ways to make small projects profitable.

Other essential aspects to small hydro developments are:

- *simple and robust design*: cost effectiveness needs to take priority over optimum performance.
- *maintainability*: projects should last over 50 years, but a scheme that is difficult to maintain eventually won't be maintained.
- *environmental sustainability*: working with the regulators to ensure such issues as flood defence and fisheries are properly accounted for.

The UK still has many thousands of undeveloped small hydro sites. Derwent Hydro has developed its own list of known sites in the power range 50-500 kW which, in the context of the Renewables Obligation, have become economically attractive. Many of these are brown-field developments, on the sites of old paper mills, cotton mills, etc., or early hydro-electric developments rendered redundant by the arrival of the grid. These sites can often be brought on line faster and cheaper than a green-field development.

*If you would be interested in pursuing one or more of these sites, or have your own site(s) that require some experienced guidance, please contact Oliver Paish or Jon Needle.*

## Mini-Hydro Project Feasibility

The following table summarises the 4 levels of professional assistance that Derwent Hydro can offer prospective developers of mini-hydro sites (from 5kW to 500kW).

Prices are valid for work commissioned before 30th September 2006.

<b>LEVEL OF SERVICE</b>	<b>CONTENT AND OUTPUT</b>	<b>PRICE RANGE</b>
<b>Desk Study</b>	<ul style="list-style-type: none"> <li>Brief review of the site based on information supplied by the owner/developer (i.e. grid reference, name of river, estimated fall, site pictures)</li> <li>Verbal or written response on the approximate potential and key issues to resolve to take the site forward</li> </ul>	No charge
<b>Preliminary Site Assessment</b>	<ul style="list-style-type: none"> <li>Visit to assess the site, examine any existing works and machinery, measure the hydraulic head, estimate the available flow rate, provide a first indication of energy output and economic payback, and discuss development plans with the owner.</li> <li><i>Output:</i> 1-2 page site summary report</li> </ul>	£495 plus travel (a discounted rate of £345 applies to domestic clients or community groups) (Only if the visit plus travel can be completed within one day. Travel is charged at 50p/mile)
<b>Pre-feasibility Study</b>  (applicable to sites of less than 50kW)	<ul style="list-style-type: none"> <li>Detailed site survey to take key measurements and draw up the outline scheme design. Collection and analysis of flow data and assessment of energy capture. Procurement of budget quotations for the equipment supply.</li> <li><i>Output:</i> Summary report with schematic design drawings, system specification, energy calculations, outline costing, economic payback.</li> </ul>	£750 - £3000
<b>Full Feasibility and Planning Consent</b>  (applicable to sites of more than 50kW)	<ul style="list-style-type: none"> <li>Detailed measurements and analysis of data. Detailed scheme design and costing. Full economic assessment. Discussions with planners and provision of supporting documentation for licence applications.</li> <li><i>Output:</i> Fully documented feasibility report.</li> </ul>	£3000 - £10 000