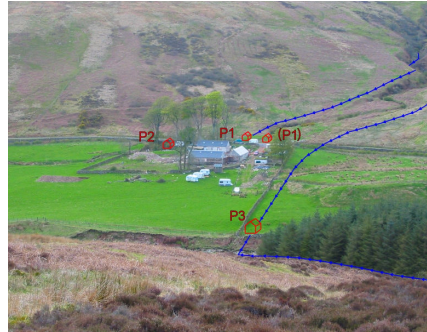


SCHRI CASE STUDY – Technical Assistance

Glenscorrodale Hydro Feasibility Study For Rokpa Trust (South West Scotland)



Introduction

Rokpa Trust is a registered charity. Its objectives are to promote Buddhism and interfaith dialogue, to provide medical care, therapy and education and to relieve poverty.

The Trust has recently expanded its facilities on Holy Isle, close to the Isle of Arran, which is part of North Ayrshire. It has developed a long-term retreat centre for women on Holy Isle and is now engaged in developing Glenscorrodale, a farm steading towards the Southern end of Arran, as an equivalent facility for men.

The site is on the Arran Moors Special Protection Area and Site of Special Scientific Interest, due in part to the area being a breeding ground for Hen Harriers.

Two new accommodation blocks are being constructed plus a shrine room. The site is several kilometres from the nearest connection point for grid electricity. A diesel generator is the source of electrical power currently. The ethos of the centre and the benefit of reducing noise and running costs make a renewable energy source attractive. There are two burns, one running down either side of the glen, for which the Trust would like to assess the potential for providing hydro electricity.

As there is more than one option, ie. using one or other burn, or both, and the specifications for the various electrical loads on the site could be affected by the amount of energy available, a feasibility study was commissioned, funded by the Scottish Community & Householder Renewables Initiative and the Trust, in the form of in-kind assistance provided to the consultant in his work.

Following discussions between the Trust representative and the local SCHRI Development Officer, based at the Energy Agency in Ayr, a tender brief for the study was sent to three consultants on small-scale hydro.

The total cost of the study, carried out by SEARCH For Renewable Energy and including the Trust's in-kind contribution, was £3,208, for which the Scottish Community & Householder Renewables Initiative provided a 91% grant, amounting to £2,926.

Aims & Objectives

The main aims of the project were to assess:

1. Electrical power generation – expected electrical power output from various high and medium head schemes, indicating the variation of power through the year, and annual energy output;
2. Outline scheme design, with equipment listing;
3. Suitability of the scheme to power all or some of the proposed electrical loads;
4. Budget costings;
5. Assessment of the alternative schemes' feasibility.

Who was involved?

The lead organisation was Rokpa Trust, which also provided in-kind assistance (worth £240) with the site survey. Other organisations involved were:

- Energy Saving Trust
- SEARCH For Renewable Energy
- Energy Agency

Funders (£2,926)
Consultants
Advisers

The approach

With the assistance of their SCHRI Development Officer the group sent tender briefs to three small-scale hydro consultants in November 2003, giving them an indicative upper price of £3,000. SEARCH for Renewable Energy and Dulas Ltd made proposals and SEARCH's proposal was accepted, in part because they were able to combine their site survey with another already scheduled to take place on the Island for Eas Mor Ecology Ltd (its case study is also available).

Grant approval was given and the site survey took place on 5th May 2004. They assessed the practical feasibility of installing various schemes at the site, including identifying potential intake and powerhouse positions and pipe routes, measuring the relative height differences, inspecting ground conditions for building weirs and considering access requirements.

The consultant then researched the hydrology of the area, calculated flow duration curves and electrical power outputs and assessed the likely costs of the proposed options. He also consulted with Scottish Natural Heritage and the Council's Planning Department on their likely reaction to a planning application.

Results

The main findings were as follows:

Various high and medium head run-of-river schemes are considered feasible, with rated capacities up to 12kW, the following giving a sample of the estimated costs:

- 1) 12kW taking from both burns £100,000
- 2) 12kW taking from one burn £74,000
- 3) 11kW medium head £65,000



View of a potential high-head intake site

The first example, although it has the same output rating as the second, both being high head, could provide a steadier supply and around 17% more energy each year (and 72% more than the third option). However it is not as cost-effective as scheme 2) (partly due to the cost of a pipeline crossing two rivers) and so 2) was recommended for construction, assuming that agreements could be made with the two landowners over whose land the pipework would run. Otherwise the third scheme is recommended. The annual outputs are estimated at 69, 59 and 40 MWh per annum respectively, worth perhaps £6,210, £5,310 or £3,600 per annum to the Trust based on various assumptions about diesel and ROC prices.

The Next Stage

The next stage in the project is to employ a hydro specialist to draw up specifications for the chosen option, identify the aspects that can be carried out by Trust volunteers and those that should be put out to tender.

The Trust has committed all its available resources to completing construction of the centre before the start of the first retreat. As no work can be carried on during a retreat and the Hen Harrier breeding season must be avoided for the planned construction, the project cannot proceed further in the short term. However, it may well do so in the future.

Further information

Hydro Consultant: SEARCH for renewable energy, Laurieston Hall Cottages, Laurieston, CASTLE-DOUGLAS DG7 2NB Tel. 01556 505873 Mob. 07884 402299 Contact Richard Langley

Community group contact

Martin Hird cmhird@aol.com

SCHRI Development Officer contact

Carola Menzel
SCHRI Development Officer, Energy Agency, Donald Hendrie Building,
Auchincruive, Ayr, KA6 5HW
t: 01292 521896
e: carolamenzel@energyagency.org.uk
w: www.energyagency.org.uk

Scottish Community and Householder Renewables Initiative – General Enquiries

T: 0800 138 8858
E: schri@est.org.uk
W: www.est.org.uk/schri