

# Harlaw Hydro Community Energy Scheme



Harlaw Hydro  
Pentland Hills Regional Park

Date of Visit: 25<sup>th</sup> November 2015

The Balerno Village Trust benefits from the proceeds of Harlaw Hydro Limited's 66kW hydro scheme. The scheme is directly owned by 250 locals through a share offering which raised almost £400,000.

## Background

The idea for the Harlaw hydro community project was born out of the desire for an independent income to the local community and to produce green energy. The possibility of recreating a hydro scheme at Harlaw Reservoir was voiced in 2009. A feasibility study in 2010 confirmed that it was a practical and profitable proposition. After 4 years of planning, meetings and obtaining approvals the group were in a position to build the project in July 2014. Work started in September 2014 and completed in August 2015 with the formal opening by the Minister for Business, Energy and Tourism Fergus Ewing MSP on 1st September 2015.

Harlaw Hydro Limited is an Industrial and Provident Society which is also known as a bona fide co-operative society (BENCOM). It is registered under the Industrial and Provident Societies Act 1965 rather than as a company under the Companies Act. The official objectives of the society are shown in Figure 1.

The society has 7 directors and 250 shareholders who together raised nearly £400,000. The share offer was launched in March 2013 and ran until July of that year. The profits generated by selling power to the Grid will be used to sustain the scheme in the first place, pay the shareholders a dividend and then benefit the local community.

The hydro schemes key features are:

- Maximum Power 75 kW
- Average flow in watercourse of 330 l/s
- Gross head of 18 m
- Distance between intake and tailrace exit is 110m
- Expected annual energy yield 261,165 kWh
- Capacity Factor 44.6 %
- Expected annual CO<sub>2</sub> saving of 129 tonnes

## Figure 1. The Objectives of Harlaw Hydro Limited

- Provide an opportunity for public spirited people and organisations to contribute financially to the community, with the expectation of an environmental and social reward.
- Support the activities of Balerno Village Trust (registered number SC 369378) in its charitable objectives, by donating a proportion of its annual revenue, as set out in share offer documents, to Balerno Village Trust (or if it ceases to exist, a body with similar objectives).
- To develop and operate a renewable energy project, or projects.

## Financial Figures

The tables below summarises the financial performance of the scheme. Over the next 20 years the scheme is expected to inject over £1 million into the local community.

Simple Financial Summary (p.a.)	
Income	£60,000
Maintenance & Service	£4,000
Share Interest	£6,000
Cost of Lease	£0 (4% after year 6)
Operation Costs*	£10,000
Operation Surplus	£50,000

\*Operation Costs is made of maintenance & service, share interest and cost of lease.

The table below gives a detailed breakdown of the capital costs involved with the project. This includes a real time monitor system which will be displayed at the Harlaw House Visitor Centre. The cost of this system is shown under the title HH Education.

Capital Costs	
Item	Totals
Equipment (Kestral)	£156,301
Civil Construction (SJB)	£151,261
Grid Connection (SPN & SSE)	£25,205
Design & Contract Management (Adrian Laycock Ltd.)	£19,200
Blacksmiths (DMH & Barr)	£6,278
Insurance (Insureness)	£5,596
Clerk of Works (Clayton Fourie)	£4,020
Lease Contract (McClure Naismith)	£3,680
Archaeology (Guard)	£3,320
Pipe Bend (George Brown)	£2,592
HH Education (AW Design)	£2,103
Trees (Forest Frontiers, Cutabove)	£1,975
BT	£1,346
SEPA - Variation	£83
<b>Total</b>	<b>£382,960</b>

## Project Timetable

- **September 2009**  
Community consultation
- **June 2010**  
Feasibility study – 5 Water of Leith sites
- **March 2011**  
Feasibility study – Harlaw Reservoir
- **September 2012**  
Initial planning permission received
- **October 2012**  
SEPA Extraction licence granted
- **March 2013**  
Lease heads of terms agreed with CEC
- **March 2013**  
Public meeting to launch Initial share offer
- **July 2013**  
Initial share offer closed.
- **August 2013**  
Design Engineers requested to tender
- **October 2013**  
Design Engineer appointed
- **11th February 2014**  
Turbine & control equipment contract awarded

- **10th April 2014**  
5 potential civils contractors requested to tender
- **15th May 2014**  
Draft lease received from the council
- **15th May 2014**  
4 contractors submitted tenders for the civils work
- **24th July 2014**  
The Council give permission for work to start on site
- **24th July 2014**  
Main civils contractor appointed
- **3rd September 2014**  
'Golden Spade' event on site – The Rt Hon Donald Wilson the Lord Provost cuts the first sod
- **24th September 2014**  
Work started on site
- **13th October 2014**  
Access track created
- **20th October 2014**  
Concrete for base of 1st thrust block poured
- **24th November 2014**  
2nd thrust block concrete poured
- **16th January 2015**  
Concrete for powerhouse floor poured
- **16th February 2015**  
Scottish Power Networks replaced the transformer next to the Visitor Centre with a bigger one sufficient to take the power from the generator
- **16th March 2015**  
Powerhouse finished and watertight
- **16th March 2015**  
Generator control panel installed
- **16th March 2015**  
Power cable connected to the transformer at the Ranger Centre
- **23rd March 2015**  
Electricity meter installed
- **20th April 2015**  
Turbine delivered to site
- **18th May 2015**  
Generator shaft found to be damaged. New generator ordered
- **26th May 2015**  
Turbine aligned and connected to incoming water supply pipe
- **22nd June 2015**  
Turbine concreted in place
- **7th July 2015**  
The replacement generator was installed. Electrical installation started
- **21st July 2015**  
The G59 test was passed. This is the test that Scottish Power Networks have to witness before they allow us to generate electricity to the national grid
- **23rd July 2015**  
Electricity Generation started
- **1st September 2015**  
Grand Opening by Minister for Business, Energy and Tourism Fergus Ewing

This information was primarily gathered from the Harlaw Hydro website: <http://www.harlawhydro.org.uk/>



We have developed a straight forward hydro system which can hopefully be easily replicated by other community groups and landowners

*Martin Petty, Chairman of Harlaw Hydro Limited. Nov 2015*

