THE HEATOLLER PROJECT

HARNESSING COMMUNITY HYDROELECTRIC POWER IN THE LAKE DISTRICT FOR LOCAL BENEFIT

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PROJECT OVERVIEW

The Heatoller Project is a feasibility initiative exploring how hydroelectric power in the Lake District can be harnessed to generate low carbon heat. The project focuses on pairing small-scale, community-focused data centres with local renewables to capture and distribute surplus heat through an ambient network.

WHY SEATOLLER?

Seatoller in Borrowdale is a prime pilot location due to:

- Proximity to an existing 100kW hydro scheme
- Fibre connectivity
- Off-grid heating reliance
- Community and Parish Council support

The site offers a strong opportunity to demonstrate carbon savings and reduced dependence on oil.

Conceptual data centre design

THE DATA CENTRE

The pilot project proposes an innovative mini data centre that serves as both a digital infrastructure hub and a community heating solution.

- Smart Heat Generation: Servers running local applications produce sufficient heat to meet property and community requirements.
- Heat Storage: Boreholes are proposed to store surplus heat for later use, balancing fluctuations between energy generation and heat demand.
- Immersion Cooling: Efficient cooling technology captures waste heat at high recovery rates, avoiding noisy, inefficient fan-based systems.
- Design & Maintenance: Housed within a small stone-clad shed, the centre is designed to blend into the landscape, while remaining simple to maintain and operate.

HOW IT WORKS

1. Energy Utilisation

Locally generated hydro power supplies modular data centres at more favourable rates than grid export prices, supporting both financial sustainability and growing data processing needs.

2. Heat Recovery

Every unit of electricity used in processing generates an equal amount of heat. This waste heat is captured, upgraded via heat pumps, and redistributed to community assets such as homes, public buildings, and heat banks.

3. Community Benefit

By displacing fossil fuels, the project reduces heating costs and carbon emissions, while providing resilience for communities that are often off-grid or reliant on oil and solid fuels.

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FINDINGS SO FAR

• Technical Viability: Geological conditions are suitable for borehole drilling; thermal modelling confirms the data centre heat output (approx. 81kW) aligns with local demand.
• Community Support: Borrowdale Parish Council and local businesses have expressed strong interest; no objections raised to date.
• Environmental Fit: Minimal anticipated landscape or ecological impact; most infrastructure is underground with discreet building design.
• Financial Modelling:
    o Heat network capital cost estimated at ~£680k
    o Supported by BUS grants (£7,500/property) and a lease from the data centre operator
    o Modest surplus achievable without ongoing subsidy, with scope for reinvestment
• Planning Risks: Manageable, with next steps including a Hydrogeological Risk Assessment, test borehole, and ecological surveys.

INNOVATION & SCALABILITY

This dual-use model addresses both rising data demand and the challenge of sustainable rural heating. Each kilowatt-hour of hydro energy delivers double value—supporting data services and local heat. Once proven, the approach can be replicated across other rural communities in the UK.

COMMUNITY ENGAGEMENT

• Collaboration with Borrowdale Parish Council and local groups
• Open forums, surveys, and regular engagement with residents
• Cooperative ownership model to ensure local benefit
• Economic opportunities in energy management and digital infrastructure

NEXT STEPS

• Drill a test borehole and conduct thermal response testing
• Commission environmental and planning studies
• Establish a community ownership vehicle and governance model
• Develop Phase 2 funding strategy and secure investment

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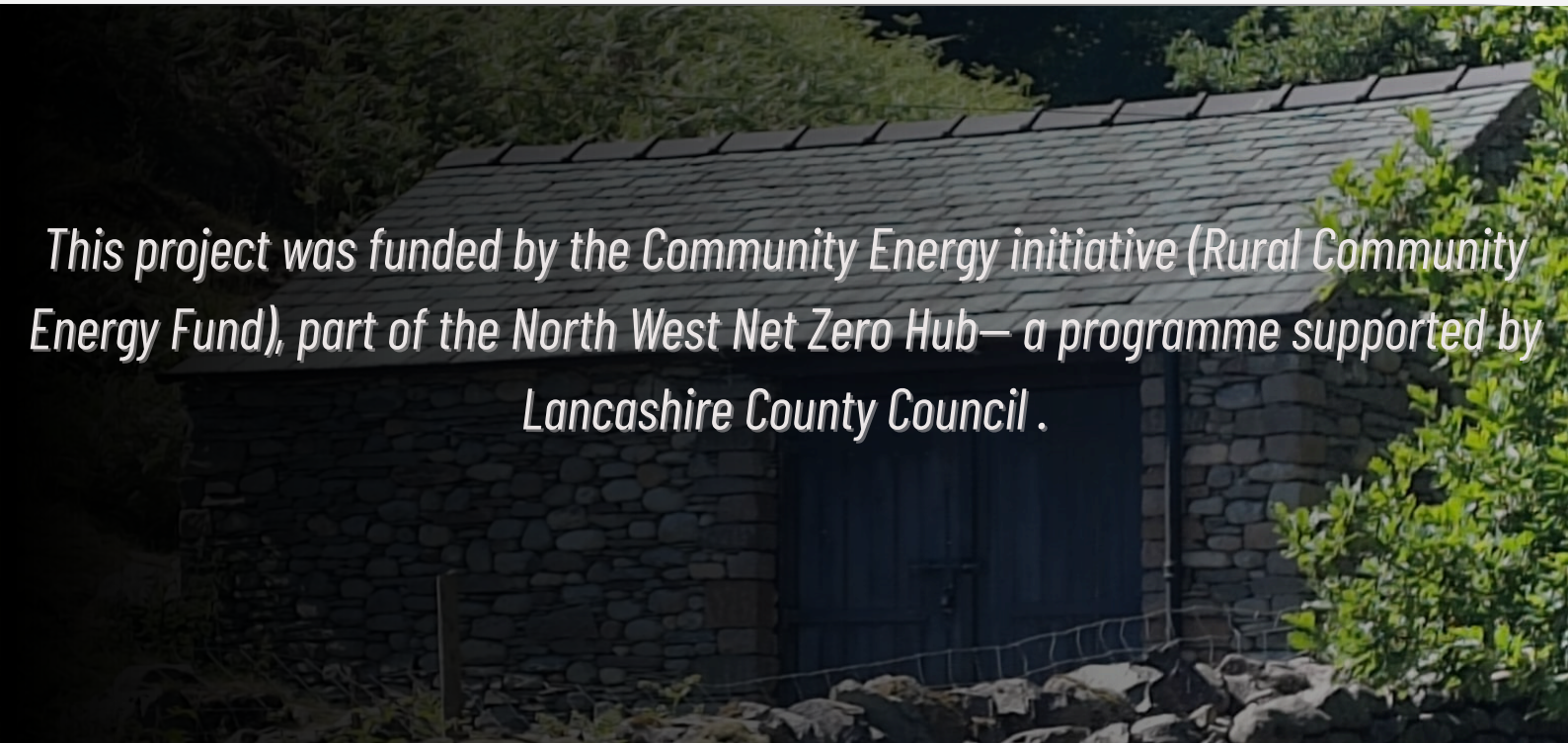

This project was funded by the Community Energy initiative (Rural Community Energy Fund), part of the North West Net Zero Hub– a programme supported by Lancashire County Council .