EXCITING PUMPED STORAGE FUTURE FOR OPEN CAST COAL MINE

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A former open cast coal mine could generate green energy in the future through an exciting proposal to develop an innovative pumped storage hydro scheme.

Buccleuch is working alongside partner organisation 2020 Renewables to develop plans for a hydro storage station at the Glenmuckloch Surface Coal Mine near Kirkconnel in Dumfries and Galloway.

The partners are currently awaiting planning permission for the proposal, which would be capable of generating up to 400MW of electricity at times of peak demand.

The Glenmuckloch Surface Coal Mine has ceased coaling and is now undergoing an extensive restoration process.

The site already hosts two community-owned wind turbines – and Buccleuch is also seeking planning approval to build an eight-turbine commercial wind farm at the site.

HOW IT WORKS

The scheme would be built around two water reservoirs – one in the bottom of the mine, the other several hundred metres above it.

Pumped storage hydro works by releasing water from the higher waterbody to the lower one and passing it through a turbine or series of turbines to generate electricity. Water is then pumped back uphill and stored in the upper reservoir until further electricity is required.

This type of hydro storage helps balance electricity supplies by using excess energy during periods of low demand (generated for example by wind farms on warm, windy days, or by nuclear generation at night) to pump water uphill.

This energy is then stored in the upper reservoir, ready to be released whenever required – particularly at times of peak demand, for example when the nation flicks the kettle on after Bake Off!

To make it successful, the scheme would require substantial investment and commitment from a range of stakeholders. The proposal would also create significant local employment during construction and operation.

Major pumped storage schemes already exist in Scotland – for example at Foyers and Ben Cruachan – but no new projects have been built in over 40 years.

The Glenmuckloch project is still at an early design stage, however securing consent will be a key part of the development process and will allow Glenmuckloch Pumped Storage Hydro Ltd to continue assessing the viability of the project.
The Glenmuckloch mine is already home to one successful energy project, known as Propel.

A team of eight S5 and S6 pupils at Sanquhar Academy are deciding how to invest the profits from the turbines at Glenmuckloch Community Energy Park for the benefit of the local area.

A first in Scotland, the community energy park has been designed to provide financial assistance for public groups and organisations across Upper Nithsdale using the revenue produced by the two 100kW turbines on a site adjacent to the Glenmuckloch surface mine.

The 30 meter high turbines have the potential to generate £2.5 million over the next 25 years, which will remain with Glenmuckloch Community Energy Park until distributed to local causes.

This task falls to the Glenmuckloch charitable purposes committee — known as Propel — which is run entirely by pupils from the school. They are actively encouraging local groups to make applications for funding.

The Glenmuckloch park was officially launched by business, energy and tourism minister Fergus Ewing in July 2014. The wind turbines began operating in autumn 2015.

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