

Glen Earrach Energy

Project Overview

glenearrach.energy



Table of Contents

Facts at a Glance	3
Efficient Use of Natural Resources	3
Accelerated Delivery	5
Community Wealth Fund	5
Appendix: About Pumped Storage Hydro	5
Project Media.....	7

Glen Earrach Energy (GEE) is a **2 GW, 34 GWh** Pumped Storage Hydro (PSH) project located on the Balmacaan Forest above Loch Ness. This project is set to be one of the UK's largest and most water-efficient PSH schemes and will play a critical role in meeting the UK's clean energy objectives, bolstering Scotland and the UK's energy security, and contributing to lower energy bills for consumers.

Alongside delivering clean power and boosting grid stability, **GEE has committed to delivering 5% of the project's gross margin revenues to a Community Wealth Fund**, estimated at over £20 million annually, which we are currently engaging widely on to ensure a fully community-led approach.

Facts at a Glance

- GEE will be capable of storing enough renewable electricity to power either;
 - Every home in Scotland for nearly a full day (3 million homes for 19 hours); or
 - All Scottish businesses for 19 hours with capacity to spare (590,000 Scottish businesses for 19 hours)
- The project supports a resilient electricity grid by balancing intermittent renewables and ensuring a secure supply.
- It is set to play a key role in the drive to Clean Power and beyond, with an efficient construction schedule made possible by the site's unique topography and geology, alongside our innovative approach to early contractor involvement.
- GEE will deliver approximately **£3bn in net system benefits** during the first 20 years of operation, resulting in over £18bn in savings for the energy system over the 120-year project life.
- This scheme alone is estimated to **reduce the carbon footprint of the post-2030 electricity grid by around 10%**.
- GEE will deliver an immediate boost to the economy with 1,000 on-site jobs during peak construction, and longer-term stability of 30-40 high-quality jobs locally in the Highlands and further ~100 jobs across Scotland and the wider UK.
- GEE will be the **most water-efficient PSH scheme on Loch Ness, storing more energy using less water than all other proposed schemes combined**.

Efficient Use of Natural Resources

GEE will be **one of the UK's largest and most water-efficient pumped storage hydro schemes**. Its high hydraulic head (480m), the vertical distance between the upper and lower reservoirs, means it will be able to store more energy using less water than all other projects on Loch Ness combined. This translates directly to significant benefits for the UK energy grid, consumers, and communities surrounding the project.

The project's efficiency reduces environmental impact while maximising energy storage and output, ensuring the best use of Scotland's precious water resources. Due to the site's natural advantages, GEE will move Loch Ness' water level by only 14mm for each 1,000MWh of energy storage. For an explanation of how this works, please find a short video [here](#).

Once complete, the main infrastructure will be secure and hidden 600m below ground (other than one main dam and two saddle dams at the upper reservoir). This ensures that the project will work in tandem with the landscape.

In addition, GEE has commissioned a smolt tracking study in collaboration with the Ness District Salmon Fisheries Board, to better understand smolt migration and how we can improve migration success.

We believe that strategic projects like GEE, which provide the highest energy output for the lowest environmental impact, should be prioritised for Scotland's clean energy future.



3D visualisation: below-ground infrastructure



3D visualisation: above-ground view

Accelerated Delivery

The project is well advanced in its construction-ready design, which is unique for UK projects. Our approach utilising early contractor involvement will allow for a streamlined process to start construction once planning and permitting are approved, significantly accelerating the construction timeline.

This accelerated delivery timeline is ensured by a carefully designed critical path, informed by large-hydro experience across the project team, which maximises the benefits provided by the site's highly advantageous geology. This programme of work has been designed alongside Implenia AG, which has a long history of delivering pumped storage hydro, including Dinorwig PSH in 1984.

Community Wealth Fund

As both developer and landowner, GEE is committed to ensuring that this project brings long-lasting social, environmental and economic benefits. We have, therefore, developed a tailored approach to community benefits through robust engagement to reflect the scale of the project. This follows extensive early community engagement before and during the project's pre-application phase.

GEE has committed to delivering 5% of the project's gross margin revenues to a Community Wealth Fund, a package of over £20 million annually, totalling £3 billion over 120 years. **This would be Scotland's largest ever community benefit fund** – more than double the £9.1m distributed by the entire wind power industry in the Highlands last year – and it is being shaped directly by those it is intended to serve. Our full report, covering engagement to date on the Fund's structure and governance, can be found [here](#).

We began engagement with local communities in early 2024, and this continues through drop-in events, consultation surveys, one-to-one meetings, roundtables and targeted outreach. As part of our engagement, we ran a dedicated **community consultation** which sought views from local residents on the priorities, structure, and governance of the Fund. This was complemented by **national polling** by Opinium, surveying over 2,000 Scottish adults (including a 500-person sample from the Highlands) on attitudes to renewable energy, infrastructure, and community benefits.

This engagement revealed a strong preference for independent and community-anchored governance, a combination of small grants and large strategic investments, a flexible approach to allow for changing community needs, and early-stage capacity funding for local organisations. Priorities emerging through consultation include local housing, skills and jobs, climate resilience, nature restoration and sustainable transport, and we are designing our delivery model to reflect those.

Appendix: About Pumped Storage Hydro

Pumped Storage Hydropower (PSH) is a mature, reliable form of Long Duration Electricity Storage (LDES) with a 120-year history of use and refinement. The system works by using low-cost renewable electricity to pump water uphill to a mountain reservoir, then releasing it through turbines to generate power when demand and prices are high. Very long duration PSH facilities (over 16 hours) can significantly reduce the need for costly curtailment payments during periods of excess renewable production and decrease dependence on natural gas-fired generation. Acting as massive batteries, PSH facilities provide critical backup for renewable energy systems by storing excess electricity from wind and solar installations and delivering it to the grid when needed.

The Scottish and UK Governments have recognised the importance of LDES and PSH in the route to net zero, with the Clean Power 2030 Action Plan showing that 4-6 GW of LDES will be required on the UK energy grid by 2030 with this increasing to 5-10 GW by 2035, requiring accelerated delivery of key projects. Since 2024, Ofgem, the Department of Energy Security and Net Zero, and the National Energy System Operator (NESO) have been



working to design and implement a 'cap and floor' financial mechanism to provide the investment certainty required for these projects to go ahead.

FINANCIAL TIMES

The small Scottish loch holding an answer to how the UK could reach net zero

Glen Earrach's pumped storage hydro project aims to facilitate energy transition with vast 'water battery'



itv NEWS

Could Loch Ness be turned into a giant water battery?



THE SCOTSMAN

Highlands pump-storage hydro schemes could pay £660 a year to every family in region

The **Inverness Courier**

Community views on planned Loch Ness hydro scheme are essential, says Glen Earrach Energy

B B C
SCOTLAND



THE  TIMES

Landowner plans £3bn pumped storage Loch Ness energy project

The Herald

EXCLUSIVE

Plan for 'UK's biggest and most efficient' energy powerhouse