# Glyn Rhonwy Pumped Storage Scheme

## Key Issues
The Glyn Rhonwy pumped storage scheme is located within a series of disused slate quarries and former World War II munitions stores to the northwest of Llanberis, North Wales, just outside Snowdonia National Park and adjacent to the Llyn Padarn SSSI. The developers, Quarry Battery Company, undertook a series of feasibility studies which confirmed the site was a prime candidate for pumped storage due to its geology, terrain and other site characteristics.

Environmental surveys identified the main constraints as protected species (bats and newts), landscape character and visual amenity, cultural archaeology, unexploded ordinance, protection of private water supplies and potential effects on the Llyn Padarn SSSI into which the quarry drained.

This case study outlines the importance of a symbiotic relationship between engineering design and environmental impact assessment, especially where opportunities for early mitigation arise.

This was the first pumped storage scheme to be put forward to planning committee in 30 years in England and Wales.

## Purpose of the Project
Quarry Battery Company proposed to redevelop derelict and disused slate quarries into a pumped storage hydroelectric power plant capable of generating up to 49MW of electricity to help regulate the National Grid during periods of peak demand.

## Description of the Project
Pumped Storage is a method of storing energy allowing it to be dispatched at times of high demand. Water is pumped from a lower reservoir to a higher reservoir, normally during the night, using excess electricity when consumer demand is low. At times of peak demand, water is released through turbines to generate electricity often at very short notice. This cycle can be repeated on a daily basis, providing a flexible and valuable balancing service to the National Grid.
Lessons Learnt
The engineering designers worked closely with the EIA team and considered environmental aspects which enabled early mitigation of potential adverse impacts as follows:

- Drilling of penstock and tailrace tunnels to mitigate landscape impacts as opposed to open cut methods;
- Avoiding quarries containing protected species whilst also protecting potable water supplies;
- Timely and controlled transportation of abnormal loads during construction by avoiding key morning and afternoon local and school traffic and implementation of an active traffic management plan;
- Reuse of approximately 850,000m$^3$ of slate in dam construction and incorporation into existing slate mounds, mimicking the historical landscape and avoid disposal from site;
- Use of existing quarry as lower reservoir, rather than Llyn Padarn, to minimise recreation, water quality and aquatic ecology; and
- Bespoke questionnaire to gain details of available accommodation.

Lessons learnt cont.
- Site specific bat mitigation due to the presence of several species of bats;
- Bespoke health and safety risk assessment due to the conditions of the quarry and specialist working requirements, such as abseiling ecologists with protected species licenses;
- Extensive pre-application and during determination consultation meant that there were no objections from Natural Resources Wales or Snowdonia National Park.

Contact details
Catherine Mackay
Associated Director, AECOM
02920 674654

For access to more EIA case studies and hundreds of non-technical summaries of Environmental Statements visit: www.iema.net/qmark