



Questions and Answers

Llyn Tegid Safety Works

What's the work being planned for Llyn Tegid?

The embankments are being investigated for their ability to withstand extreme flood events. This includes an assessment of their height, composition and erosion protection measures such as the stone wave protection on the upstream face.

The embankments included in the assessment run along the lake shore from the Bala Adventure and Watersports Centre, around the Enterprise Park bordering the River Dee and Tryweryn, up as far as the A494 bridge.

Why is the work necessary?

The work is necessary to ensure that Llyn Tegid continues to meet the requirements of the Reservoirs Act 1975 and remains safe in the long term. Llyn Tegid is regulated under the Act which requires regular inspections by qualified reservoir Inspecting Engineers. At the last inspection in 2014 some statutory recommendations were made to which this scheme relates.

When will it start?

At the earliest, construction work is expected to start in early Autumn 2020 depending on planning permission and other approvals that may be necessary.

When will the work be completed?

The project is at a very early stage and it is not possible to be definitive about timescales before a solution has been agreed. At this stage it is estimated that the construction could take up to two years.

Will the project affect the risk of flooding in Bala?

We are managing the risk of flooding to Bala in the long term and improving the safety of the embankments. These help provide flood protection to the town in conjunction with the Dee Operating Rules (see **How does water regulation work at Llyn Tegid?**), which has not flooded since the 1960's. This project will not increase the risk of flooding in Bala.

How much disruption can we expect?

Sections of footpaths will have to be closed and diverted for limited periods during construction. There will also be increased construction traffic related to the works and some of the operations could involve noisy activities such as breaking up rock.

However, the construction phase of the project will be carefully managed to minimise the amount of disruption to the local community. Where possible, work will be phased and affected stakeholders will be consulted on the approach adopted.

How are you considering the exceptional environmental quality of the lake and its surroundings?

Llyn Tegid is situated in the Snowdonia National Park and the embankments are within environmentally sensitive areas of international importance. Sympathetic solutions will be explored and opportunities identified to enhance the environment in line with the requirements under the Environment (Wales) Act 2016 and Well-being of Future Generations (Wales) Act 2015.

We will continue to consult closely with Snowdonia National Park Authority, our own natural resources team responsible for the protected sites affected, and other key stakeholders to ensure that all possible solutions are appropriately assessed, impacts minimised and enhancement opportunities identified.

What about the impact on people's recreational use of the lake and shore?

Recreational use of the lake itself is very unlikely to be affected by the scheme.

However, there will be some disruption to sections of footpaths during the project, which will be minimised as far as possible. Footpaths will be fully restored to their current condition following construction.

What about the impact on tourism?

The construction works will be managed sensitively to minimise any potential impacts on tourism. We are consulting with the local community and other key stakeholders as the solution is developed to make sure that it is delivered in an acceptable way and to listen to your views. In the long term, we hope the scheme will have a positive impact on tourism and the local economy. Maintaining the access along the lake shore and its magnificent views are a key consideration during the design development process.

What will be the first thing we'll see?

You may see some environmental and ground investigation survey works during spring 2019. This is to help provide technical background information on which the design can be developed in more detail. These will be sensitively managed and hopefully will not affect your enjoyment of the local environment.

When can we have our say and learn more?

We are engaging with key stakeholders throughout the appraisal process and will be keeping our website page up to date. We held a drop-in session in July 2018 and plan to hold a further one in Autumn 2019 where you can find out more about the proposed works.

NRW will be working closely with the community to develop areas of the design where we have some flexibility, in particular, the wider environmental and recreational enhancements associated with the scheme. We would welcome any suggestions you may have to add to the environmental and recreational opportunities identified by emailing LlynTegid@cyfoethnaturiolcymru.gov.uk

Who is doing the work?

We have appointed the multi-disciplinary consultancy firm Black & Veatch to undertake the detailed design work. Subsequent construction work will be competitively tendered at the appropriate time.

Who will consent the project?

Snowdonia National Park Authority will be responsible for determining planning permission for the project. There are also other permissions that will need to be obtained from Natural Resources Wales. Whilst part of the same organisation, technical and permitting staff operate independently and impartially with respect to their assessments.

Will trees be removed?

The outline proposals include for strengthening the embankments and improving the lake shore stone wave protection. This will involve the removal of a large number of trees (self-seeded, mainly ash) which have established themselves within the embankments, weakening them.

A limited number of trees may be retained – this is subject to further assessment, but our aim is to protect the healthiest and most valuable trees where it is possible to work around them. We expect a few such trees on the downstream (dry side) of the embankment could be retained in this

way. We are also developing ideas for environmental and landscape improvement works which will be designed to offset potential impacts, including the removal of trees. We are currently identifying potential locations for new trees and hedgerows to be planted and exploring opportunities for wider environmental enhancements. All trees that could be affected will be fully assessed through arboricultural and ecological surveys to ensure their removal is appropriately managed.

Why have trees been allowed to grow in the embankments?

Whilst some of the more mature trees pre-date the 1950's scheme, a large number (mainly ash) have self-seeded within the stone wave protection and on the crest of the embankments. Their growth might ideally have been controlled more strictly in the past through frequent clearance operations to avoid the need for the accelerated maintenance now required. The tree management we have done up to now has been focussed on monitoring their health and form, and any tree surgery or tree removal work has been prioritised around public safety. We do know that the many of the ash trees are infected with ash dieback ('chalara'); this, and their sub-optimal rooting and growing environment within embankments and between slate stone slabs, does mean they are generally not in good health. Future maintenance regimes of the embankments will control sapling growth and ensure that the same situation is not allowed to develop. The fact that these trees have been able to establish in the embankments has had no bearing on the requirement for the current proposed safety works.

Does this affect the planned Railway project?

We are aware of the proposed extension to the Bala Lake Railway and are working closely with them to understand the requirements of their scheme and how the interactions with this project could be managed.

Will the capacity of the lake be increased?

The capacity of the lake will not be increased.

Will the embankments be raised?

The outline proposals include for strengthening the embankments and improving the lake shore stone wave protection. No raising of the embankments is planned.

What will the new scheme look like?

The most significant change in the appearance of existing views will be due to the vegetation and tree clearance. This will result in opening views up across the lake for users of the lakeside footpaths and adjacent receptors. The combination of tree loss on the embankment face and improving the stone wave protection is likely to result in a hardening of the appearance, with a more textured appearance. Whilst this is a big change, it constitutes a return to something more similar to how the embankment would have looked following the Bala Lake Scheme in the 1950's.

How does water regulation work at Llyn Tegid?

Llyn Tegid, Wales' largest natural lake, first became a reservoir in the 19th Century. To guarantee a supply of water to the Shropshire Union Canal, Thomas Telford built sluices at the outlet of Llyn Tegid. Water released through these sluices was abstracted into the canal at Horseshoe Falls, Llangollen.

Then, in the 1950's, the Dee and Clwyd River Board built the Bala Lake Scheme. The lake's natural outlet was lowered (bypassing Telford's original sluices), and new sluice gates were built downstream of the confluence with the Afon Tryweryn. Embankments were built to contain water stored behind the sluice gates and to provide flood protection to the town of Bala.

This provided around 21,000,000 m³ (cubic metres) of controllable, stored water in Llyn Tegid. This storage capability means that Llyn Tegid is considered a reservoir under the Reservoirs Act 1975.

Today this reservoir is operated, alongside Llyn Celyn and Llyn Brenig, to ensure a continuous supply of water for abstraction from the River Dee. This can reach up to around 800 MI/d (Megalitres per day), by three water companies and the Canal and Rivers Trust. Releases also maintain minimum flows at key locations on the Dee to protect the environment. In addition, flood water run-off is detained in Llyn Tegid, in a short-term and controlled way, to greatly reduce the frequency and extent of flooding in the Dee Valley downstream of Bala.

Will the Dee operating rules be changed as part of the scheme?

No, the operating rules will remain unchanged.

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