

South Cumbria Rivers Trust (SCRT) are a small environmental charity aiming to protect, enhance and rehabilitate the aquatic environments of South Cumbria. We work in collaboration with organisations such as the Environment Agency (EA) and Natural England (NE) to identify, scope and deliver work that benefits the special nature of Elterwater, as a Site of Special Scientific Interest (SSSI).

Elterwater – Re-connection of the Great Langdale Beck into Middle Basin

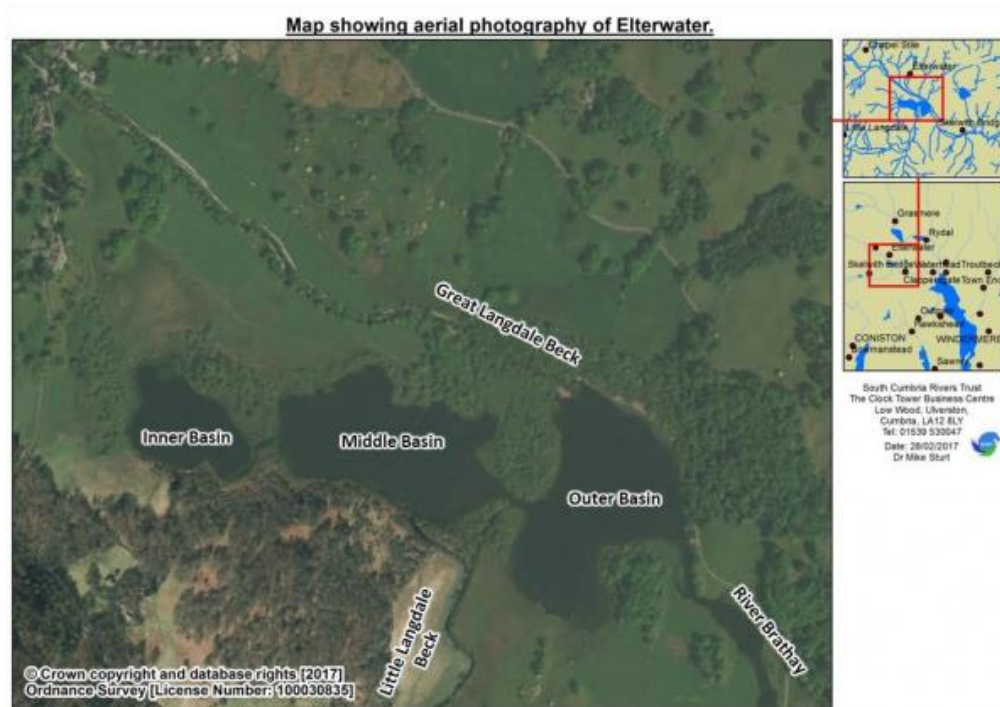


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South Cumbria Rivers Trust (SCRT) are a small independent not-for-profit charity established in 2006. Our aim is simple; we are committed to protecting, conserving and rehabilitating the aquatic environments of South Cumbria. This includes everything from rivers to lakes, tarns to becks, aquatic species and habitats.

Elterwater

Elterwater is formed from three connected basins (inner, middle and outer basin) and is fed by both Great Langdale Beck and Little Langdale Beck. It is situated just outside the small village of Elterwater in South Cumbria. As noted under Section 28 of the Wildlife and Countryside Act 1981, Elterwater is a Special Site of Scientific Interest (SSSI), the highest designation in the UK due to its nationally important lake edge vegetation communities. As per the SSSI citation, 'Elterwater has the most natural lake shore of any tarn in South Cumbria'.



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Elterwater has outstanding natural value; however, over time various factors have contributed to the decline of the lake and its water quality. Factors include invasive non-native species, modification of the inflow river channels, inputs from septic tanks and historic discharge from the waste-water treatment works (WwTW).

For approximately 40 years, up until the late 1990's, the WwTW which served the village of Elterwater discharged treated water into the inner basin of Elterwater. Whilst this discharge was consented, it contributed considerable amounts of nutrients into Elterwater. Nutrients, including phosphates, can increase the growth of algae and large aquatic plants, which can result in decreased levels of dissolved oxygen (the amount of oxygen available to living aquatic organisms which is essential for their survival). Blue-green algae can also be toxic to animals and humans if ingested. Over the decades, these nutrients have accumulated within the sediments, reducing water quality, with frequent episodes of anoxia (no oxygen) at depth, algal blooms and a decreased habitat value.

What has been done since then?

A group of stakeholders with a focus on addressing the poor water quality and restoration of Elterwater have implemented a number of interventions in order to bring this site into a more favourable condition.

In 2001 the outfall from the WwTW was moved downstream under new permits; the first step in attempting to restore the lake. Diverting the effluent from the wastewater treatment works led to a marked improvement in the total phosphorus levels in inner basin, however, this plateaued and the phosphate levels in the basin were still considerably high. Other factors such as temperature changes and poorly maintained septic tanks have also exacerbated the issue over time.

In 2012 United Utilities commissioned a review to assess options for reducing the phosphate input to the lake from the sediment in inner basin; the recommendations were then implemented by SCRT working closely with other partners, to install a pipeline which transfers clean, fresh water from Great Langdale beck into inner basin. The aim of this project was to use the freshwater transfer to stop the lake from becoming oxygen depleted at depth which causes phosphate to be released from the sediments on the lakebed. This would also allow natural sedimentation processes to form a cap, reducing the release of phosphate from sediments and therefore the presence of algal blooms.

At this time Little Langdale Beck was also re-connected into middle basin, helping to restore natural systems and improve water quality in middle basin, which also has elevated nutrient levels.

On-going work is being undertaken to monitor the changes in Elterwater over time. However, there is a further opportunity to contribute to the restoration of natural processes in Elterwater by allowing Great Langdale Beck to re-connect to middle basin via a historic channel.

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Great Langdale Beck re-connection:

Historic maps, shown in Figure 1 below, indicate the original, natural course of Great Langdale Beck into middle basin. Between 1920 and 1956, these channels were diverted east into a straightened channel, which now bypasses middle basin and flows directly into outer basin of Elterwater.

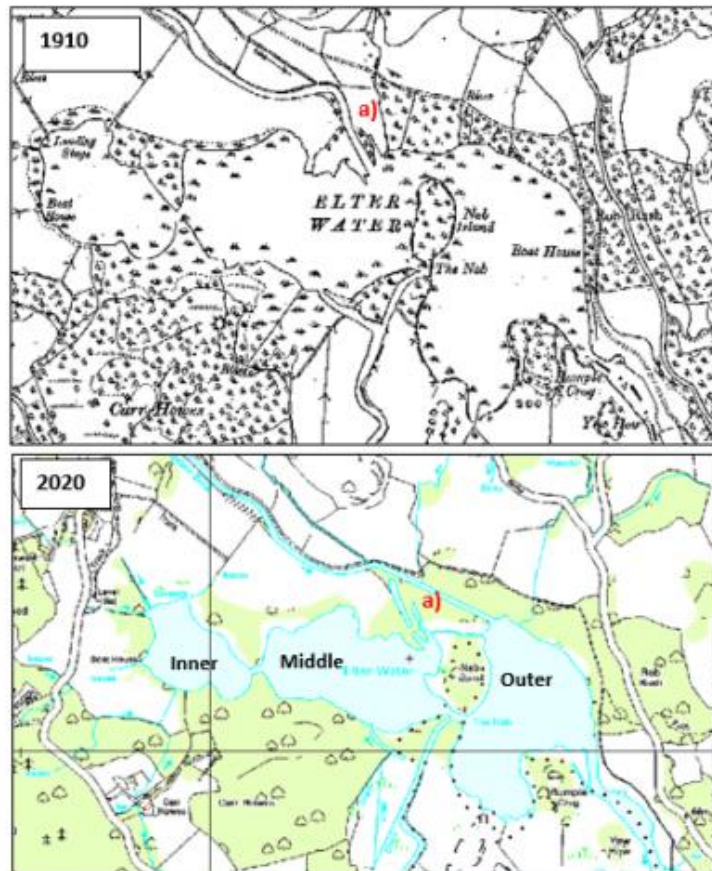


Figure 1: OS maps of Elterwater from 1910 and 2009. a) shows the location of the delta of Great Langdale Beck, illustrating how alignments have changed over time.

Consequently, the river in this location is showing signs of rapid change as the river's energy works to return it to its previous path. This is evident in the picture below, where gravel deposits are being forced up the bank and through the woodland.

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Looking downstream at the location where the channel was diverted. This shows the deposition of gravel which has formed on the right bank, with a shoal sticking out into the channel, narrowing it.

By removing freshwater inputs from the lake system, the lake has been effectively stagnating, becoming less oxygenated; providing the perfect environment for nutrients to develop over time leading to more algal blooms and exacerbating the poor water quality issues. Funding has recently been secured to further Elterwater improvements by restoring the natural hydrology of the system.

A group of environmental organisations are working together to enhance Elterwater. An opportunity has been identified and funding secured to restore the Great Langdale Beck connection to middle basin through a 'high-flow' channel. This will transfer clean, well-oxygenated water back into middle basin, benefiting the water quality of the lake. During high flows, the river is already using this route through the woodland to middle basin. The proposal aims to enhance this, by creating a shallow scrape to provide a more prominent flow route during storm events. This will create a dynamic, meandering channel that will naturally evolve over time. This will also support the development of wet woodland habitat, which is highly valued by native wildlife.

The existing channel of Great Langdale Beck will be left in place. However, the habitat and value of this straightened reach will be enhanced with the addition of woody debris which will provide a refuge for fish and invertebrates, benefitting local bird populations.

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This project also funds the trial installation of floating platforms for great crested grebes to nest on. Great crested grebes have been observed on Elterwater in the past but less so in recent years. Additionally, invasive non-native species including Japanese knotweed, skunk cabbage and Himalayan balsam will be controlled, helping to support native species around the lake system. Our aims are to maintain and enhance this special site by restoring and maintaining natural processes in order to better protect Elterwater and its unique vegetation.

In developing these proposals, SCRT have worked collaboratively with the Environment Agency hydrogeomorphology team, Natural England and the National Trust. The project has been designed to enhance environmental benefit without risk of flooding, changes to water levels or risk to public amenities. This project is funded under the Water Environment Grant via the European Agricultural Fund for Rural Development.

We have created a separate Q & A document, which covers some questions and more technical information about this proposal. We have also formed a local community engagement plan, which can be found on our website or by request from SCRT. This covers how we will be communicating with the public throughout this proposal.

CONTACT US

Please contact us at admin@scrt.co.uk if you have any questions and we will do our best to answer them as soon as possible.

All information and updates to date can be found on our website: <https://scrt.co.uk/what-we-do/current-projects/elterwater>

This project is funded by the European Agricultural Fund for Rural Development: Europe investing in rural areas.

