

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 Proposal - Question and Answer Document



ISSUE DATE: Tuesday 9<sup>th</sup> March 2021

*This document has been created to answer any initial questions the community may have about the Elterwater proposal, as well as covering more technical aspects of the works we hope to undertake. Please refer to the Elterwater proposal document for an overview of our proposal to reconnect Great Langdale Beck into the middle basin of Elterwater.*

➤ *Why is this project necessary?*

*The primary driver for this project is to restore the naturalness of the lake. Restoring the [paleo-channel](#) and giving the beck more opportunity to connect to middle basin will retain natural processes, allowing cool well-oxygenated water to flow into middle basin where there are [phosphate](#) rich sediments. Phosphate is a nutrient which in excess can cause issues related to elevated nutrient levels such as the increased presence of algal blooms; phosphate levels in the middle and inner basin of Elterwater are currently classed as high. The channel at Great Langdale Beck was straightened in the 1920s-1950s causing a number of issues to arise. This project will address these issues whilst also supporting work to improve water quality in the middle basin.*

*Issues with the current Great Langdale Beck channel:*

- *Lower gradient, straightened channel*
- *Less energy and sediment/ gravel transport causing gravel build up*
- *Lack of fish refuge and [biodiversity](#)*
- *Lack of [in-channel](#) variability*
- *Causing damage to Cumbria Way footpath*
- *Clean well-oxygenated water is by-passing the Elterwater system*

*Benefits of proposed new channel:*

- *Transfer of clean, well oxygenated water to middle basin, leading to improvements in water quality*
- *Benefits to biodiversity including for Great Crested Grebes and fish*
- *Maintenance of natural channel processes including sediment transport. The natural sediment transport will also help to seal in any historic pollution in the existing lake-bed sediments. This will improve water quality and therefore reduce the frequency of blue-green algal blooms.*
- *Reduced requirement for footpath maintenance*

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- *Habitat improvements through opening up the woodland and creating a natural channel system.*
- *What volumes of water are estimated to be introduced into the lake by the new channel? Will this change the behaviour of the lake?*

*There will be no change to the [inflow/outflow](#) balance of the lake system because of this project; Great Langdale Beck is still an inflow to the system and the River Brathay the outflow. Lake levels are controlled by the height of the lip at the downstream end of the outer basin and there is no proposal to change this. The project will restore the in-flow [delta](#) position to middle basin, thereby, restoring a regime around which the lake developed. In flood events water will overflow into middle basin, whereas currently it enters outer basin and then backs up. However, this should be viewed as a system and as the constriction point is the outflow at the Brathay, lake levels will stabilise to this point.*

*Analysis by Environment Agency [hydro-geomorphology](#) staff shows that the proposed works will not increase the water level of Elterwater's three basin system. Middle and inner basin currently fill up from, and subsequently drain to, the outer basin (when the inflows from the becks exceed outflow along the River Brathay); through this project no additional water is being added to the system. The level of water in the lake system is controlled by its outflow, where the Brathay leaves. As the system is controlled by this outflow, restoring the original river input into the middle basin will not have any effect on water levels, however, lake levels will continue to be influenced by rainfall.*

*Great Langdale Beck is already using the proposed channel during times of high flow; this project will give the channel more chance to re-connect in a natural way. This is a gradual process and will change over time as the river finds its own pathways through the woodland. Furthermore, the additional frequency of clean, cool water entering middle basin will help to improve water quality in the system.*

- *How are SCRT measuring any impact on the water level?*

*Measurements of lake levels using a satellite-based system have been taken and these can be repeated.*

- *Will this reconnection cause flooding?*

*No. As explained above, no additional water will be entering Elterwater. This is because the outflow controls the water levels in Elterwater and there will be no change to this. It helps to think of this like a bath. If you have a bath full of water, the speed it takes for the bath to empty is based on the hole the water flows out of.*

*Great Langdale beck flows into Elterwater now. This project will just be changing where the beck will flow into in high flows – a change from the outer basin to the both the outer and middle basin. So, the amount of water going in will not change, we are just proposing to change where it goes in, on certain occasions. This is to restore natural processes and help the water quality of middle basin.*

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- *Little Langdale beck is already connected into the middle basin on other side of lake – why is more water needed?*

*This project is about improving water quality and restoring lake hydrology by assisting the reconnection of natural inflow positions. Great Langdale beck is already connecting to middle basin via this proposed channel, however, the project will offer more opportunity for this to occur which will bring multiple additional benefits, including benefits for habitat and species. Furthermore, the project to re-connect Little Langdale beck in 2016 was really successful, and this channel has now provided additional habitat as well as returning the transfer of clean water into middle basin, prior to it entering outer basin.*

*This project provides the opportunity for Great Langdale Beck to choose its own path whilst providing added benefits for native species. Furthermore, restoring the historic system will bring multiple benefits as the existing channel has a number of issues. Re-connecting this channel will bring well-oxygenated clean water into middle basin restoring historic processes. It will also reduce the pressure on the existing footpath; where the channel has been straightened the decrease in the rivers energy is causing a deposit of gravel to build up. Additionally, the overall project, will help to create habitat and support populations of great crested grebes and fish as well as reducing the impact of invasive non-native species.*

- *How have impacts been assessed?*

*Walkovers, LIDAR (remote sensing) and [geomorphology](#) surveys of the natural delta environment and existing channel erosion has been carried out. Erosion is a natural process which we support, however, erosion is occurring near the footpath; the proposed interventions will help to dissipate this energy and therefore maintain the Cumbria Way footpath, a significant right of way.*

- *Has the potential/speed of silting up been assessed?*

*A geomorphology assessment including [topographic surveys](#) has been undertaken. This is a dynamic process, and no gravel clearing will be undertaken; the channel will erode and deposit over time developing a natural depositional environment in the delta and supporting wet woodland habitat.*

*The existing Great Langdale Beck channel will be left in place, and a shallow scape opened to allow the beck to connect more readily through the woodland. The steeper gradient of this channel into middle basin will naturally maintain a dynamic system. During high flow events the rivers energy is already pushing gravel deposits through the woodland, this project will give the beck more opportunity to access this channel. Furthermore, it will also help to reduce the gravel deposits which are accumulating where the current channel slows down as it enters the straightened section.*

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- *How are access routes to be protected?*

*As stated above the project will help to protect the Cumbria Way. During works access to the site will be through Rob Rash woodland, working closely with the National Trust to protect the site, with extra considerations and protection put in place to protect the public right of way. Work will be undertaken during low flows to protect the river habitat.*

- *What is causing the trees to die off around the lake?*

*Ash die back is present around the lake.*

- *When do SCRT envisage doing the works?*

*SCRT hope to carry out these works in Summer 2021. As Elterwater is a SSSI, the Environment Agency only permits works to be completed between mid-June to September. Planning permission is also required for the project, and we hope to start the planning process in late March - April to allow for the six-week planning determination, plus additional time to account for any delays in the planning process due to COVID-19.*

- *How will the community hear about updates to the proposal?*

*SCRT have created a Local Community Engagement Plan which outlines how we envisage communicating with the public. As public meetings cannot occur, due to current restrictions, we will be working with the local parish councils to inform the community about the proposal, as well as utilising local notice boards. We will also have a dedicated page on our website, [www.scrt.co.uk](http://www.scrt.co.uk) for the public to access key documents and updates.*

## CONTACT US

*Please contact us at [admin@scrt.co.uk](mailto:admin@scrt.co.uk) if you have any questions and we will do our best to answer them as soon as possible.*

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**Biodiversity:** *Biodiversity is the variability among living organisms from all sources and the ecological complexities of which they are a part; this includes diversity within species, between species, and of ecosystems.*

**Delta:** *a triangular tract of sediment deposited at the mouth of a river, typically where it diverges into several outlets.*

**Dissolved Oxygen:** *Dissolved oxygen (DO) is a measure of how much oxygen is dissolved in water – the amount of oxygen available to living aquatic organisms. It is one of the most important indicators of water quality and is essential for the survival of fish and other aquatic organisms. When it becomes too low, fish and other aquatic organisms cannot survive.*

**Geomorphology:** *Geomorphology is the scientific study of landforms, their processes, form and sediments at the surface of the Earth.*

**Hydro-geomorphology:** *Is an interdisciplinary science that focuses on the interaction and linkage of hydrologic processes with landforms or earth materials and the interaction of geomorphic processes with surface and subsurface water.*

**In-channel:** *a length of water wider than a strait, joining two larger areas of water.*

**Inflow:** *The process of flowing in.*

**Outflow:** *The process of flowing out.*

**Paleo-channel:** *A paleochannel is a remnant of an inactive or moved river or stream channel that has been filled or buried by younger sediment.*

**Phosphate:** *Phosphates are the naturally occurring form of the element phosphorus, found in many phosphate minerals. In mineralogy and geology, phosphate refers to a rock or ore containing phosphate ions. Inorganic phosphates are mined to obtain phosphorus for use in agriculture and industry. Too much phosphorus can cause increased growth of algae and large aquatic plants, which can result in decreased levels of dissolved oxygen – a process called eutrophication. High levels of phosphorus can also lead to algae blooms that produce algal toxins which can be harmful to human and animal health.*

**Topographic survey:** *Topographic survey is simply the recording of coordinates and height data for a particular survey area. This data can be used to create spot height maps, contour maps, or more complex terrain models of the surveyed area.*