Better Outside Case Study: Fernilee Reservoir

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The Location

The Goyt Valley is situated in the High Peak Borough, between Buxton and Whaley Bridge. The valley is characterised by two reservoirs, Errwood and Fernilee, which were constructed in the 1930s and 1960s to supply drinking water to surrounding conurbations. Around the reservoirs are forested slopes and high moorland.

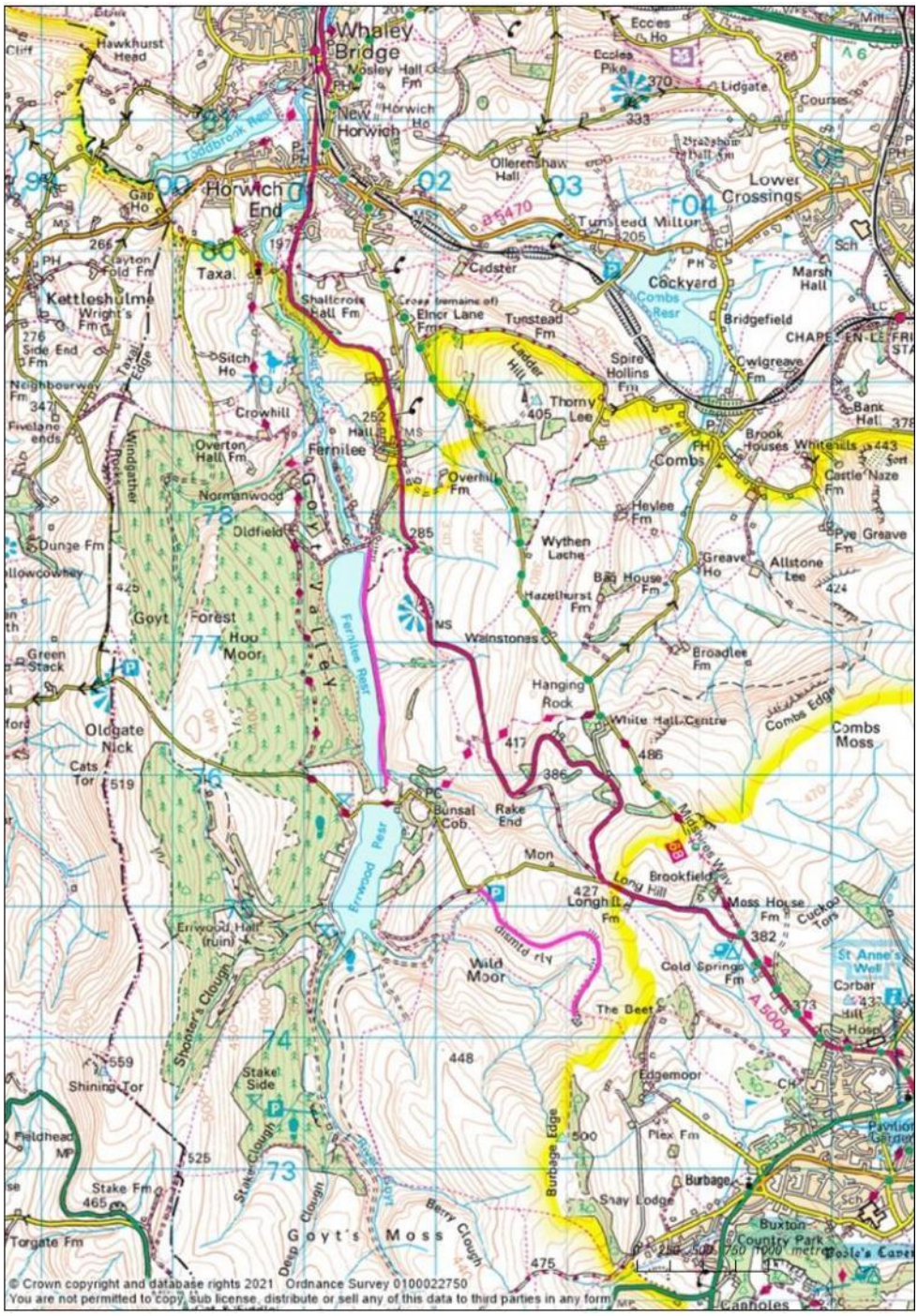

Figure 1. Fernilee Reservoir in the Goyt Valley, mid-way between Whaley Bridge and Buxton

The Landowner

The site is owned and maintained by United Utilities.

The Route - Before

A former railway line (Cromford and High Peak Railway) runs along the east side of Fernilee Reservoir which would be suitable for easy walking, including with buggies. The approach to the route is along a short section of tarmacked road which had a very potholed surface, the track itself was also uneven with pot holes and drainage issues, becoming very muddy in wet weather conditions.

This route had potential to be upgraded to 'access for all' status and included in a set of Miles without Stiles routes being developed by the Peak District National Park Authority. The proposal would include improved informal parking at the north end, improved drainage and resurfacing, removal of self-set trees to open up views of reservoir, installation of benches and interpretation panels.

This is a concessionary route (not a public right of way) of 1.23 miles (1.98km) in length, with a gradient of 105ft (32m) ascent (from south to north).

A SWOT analysis of the route was conducted with stakeholders in the development of the project and is given below:

Strengths	**Weaknesses**
• Good range of heritage features and proximity to Buxton and Whaley Bridge • Access to heritage and wildlife • The route could be safely promoted without impact on heritage features • There are nice views across reservoir • Improved surfacing and grading of incline would make the route easy access for all • There is informal car parking at either end of the route	• The nearby toilets owned by High Peak Borough Council have been refurbished, however there are issues with the water supply meaning they are currently closed. • There is car parking available but no other facilities.
Opportunities	**Threats**
• There are links to the wider rights of way network, including access to and from Whaley Bridge to the north. • There are opportunities in the longer term to link to the rest of the 'High Peak Trail' multi user route. • There is potential for welcome and orientation panels.	• More people could cause more disturbance to wildlife. • Promotion of the route could increase its use by motorised vehicles and unauthorised users.

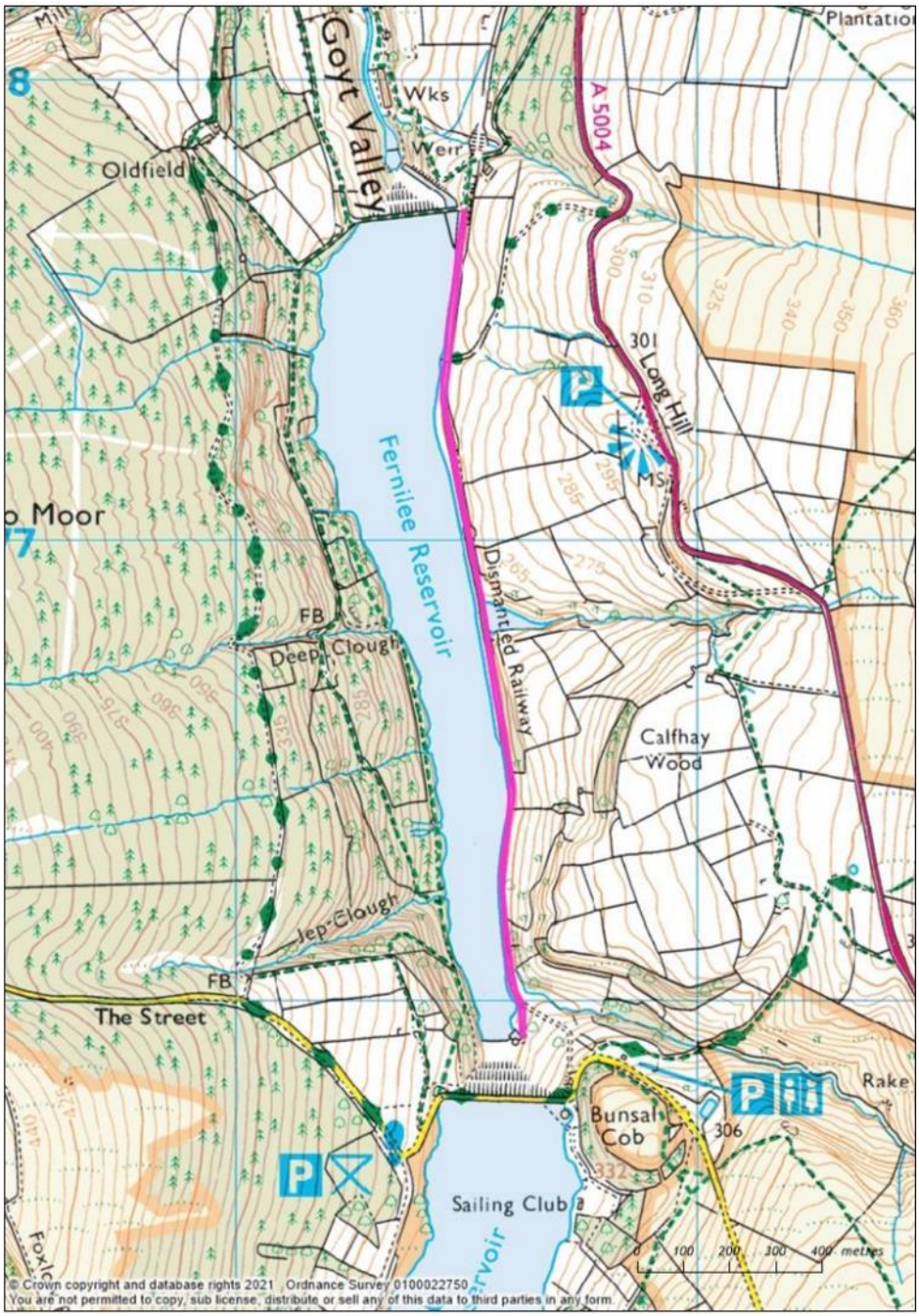

Figure 2. The proposed route

Figure 3. The potholed, uneven approach road

Figure 4. The access gates and barriers at the northern end

Figure 5. Poorly drained muddy sections, particularly beneath trees

Figure 6. Potholes all along the route

Figure 7. Degraded benches

Figure 8. Access gates and barriers at the southern end, note motorbike inhibitor and wicket gate

Route Improvements

An invitation to tender was produced and a contract let to resurface the main track and replace the motorbike inhibitor barriers at either end with large kissing gates suitable for use by all sizes of wheelchair and mobility scooter (the Woodstock kissing gate made by Centrewire).

Due to the route running alongside a drinking water reservoir an appropriate choice of surfacing materials was essential. The initial intention was to use a product called 'Toptrec' or 'Ultitrec' but concerns were raised that this product could contain crushed or graded bitumen with potential to leach hydrocarbons into the reservoir. It was also important to keep dust to a minimum, should it rain heavily within a short time span of the product being laid as all the drainage feeds directly into the reservoir and there wasn't a complete buffer between the path and reservoir to absorb any fines. This related mainly to cement and limestone products that have the potential to create a slick or plume in the reservoir which is reportable as a pollution incident, and secondly if there is a high limestone content it could affect the pH of the reservoir and pass through to the treatment works as a spike.

The material used was self-binding gravel of naturally excavated materials appropriate to the site location, graded 12mm to dust (approx. 2 tonnes : 1cu m) and laid using a suitable machine to a finished thickness of 50mm over a sub-base.

In the wettest muddiest area (shown in figure 5) a 'French drain' was installed to aid drainage.

There were some challenges experienced in achieving the required smooth compacted surface, this was due to the limitations of the material itself, ensuring consistency of load from the quarry to achieve the desired ratio of gravel to dust and the final machine grading.

Remediation works were required to remove loose gravel and re-compact the top dressing.

Additional site constraints included a high pressure gas main, water main and electricity cables. Detailed working methodology had to be agreed with Cadent in relation to the position and vulnerability of the gas main, which restricted the type of roller that could be used to compact the top dressing (no vibrations), and the depth and position of digging required to install gates and benches.

Figure 9. Re-surfacing in progress in May 2019

The newly installed access gates enable access by a range of users. Their design enables them to function as a regular kissing gate for most pedestrian and small to medium sized wheelchairs and power chairs; with the addition of a slider that is operated with a radar key (available for disabled users from their local council) which opens the swing gate wider enabling free access.

Figure 10. The replacement mobility kissing gates

However, other users of the route did not like the new gates as they felt that they impeded access for bicycles and bicycles with trailers. Post-installation it became apparent that the gates were not functioning correctly, possibly as they had been adjusted or possibly due to their installation being compromised by the location of a high pressure gas main in this location which meant positioning and depth of holes for installation were very restricted, and could not be altered from position and depth of the original structure.

Existing benches were refurbished with our team of Countryside Worker apprentices and volunteers from Tarmac; and three new benches installed in suitable locations.

Figure 11. Volunteers from Tarmac helping to re-furbish benches

The Route - After

The photographs below show the route after resurfacing and access improvements had been completed.

Figure 10. The newly tarmacked approach road

Figure 11. The previously muddy section immediately after works in June 2019

Figure 12. The same section (photograph taken from opposite direction) in December 2021

Figure 13. One of the new benches enjoying the view over the reservoir

Figure 14. An existing memorial bench, revitalised

Challenges and Lessons Learned

Working with imported materials beside a drinking water reservoir has challenges with regards ensuring there is no potential contamination.

Services including gas main, water main, and electricity line were all present on site and had to be carefully risk assessed, requiring liaison with the relevant service providers.

Challenge of achieving the desired route surface given the nature of the material and restrictions on surface rolling.

It was difficult to install access gates that enabled access by pedestrians and disabled uses whilst restricting access to unauthorised users such as motorcycles.

The proximity to two large towns and the improved surface has increased users, which means that existing car park provision is often inadequate. We now intend to demarcate specific disabled parking bays on site. We are also looking at developing additional easy access routes in the area.

Lead in time and cost were greater than initially anticipated.