

NATURAL FLOOD MANAGEMENT CASE STUDY: BIRDS PARK RESERVOIR, KENDAL

BACKGROUND INFORMATION

Birds Park Reservoir is an old, disused reservoir which has been reclaimed by nature. It can be found to the East of Sandylands Estate, located above Kendal, South Lakeland and is situated within the larger Kent River Catchment. The location of Birds Park Reservoir made it a suitable option to install some Natural Flood Management (NFM) methods to reduce the flood risk posed to this area. An NFM project involves replicating natural methods and approaches seen within the natural environment and recreating them in areas with the aim of managing the flood risk. Birds Park Reservoir, though no longer in use, was still owned by United Utilities (UU).

Following the extreme flooding caused by Storm Desmond in 2015 which saw over 2200 properties effected, multiple organisations formed a Natural Flood Management (NFM) project partnership and works began at the start of 2020. The scheme was funded as part of a much wider catchment-based approach to reducing flood risk in the River Kent Catchment. DEFRA (Department for Environment, Food and Rural Affairs) allowed £2.5M of funding for Cumbria for NFM schemes.

A partnership was created between:

- United Utilities (UU)
- The Environment Agency (EA)
- Cumbria Wildlife Trust (CWT)



Image: Cumbria Wildlife Trust

The aim of the project was to slow the flow of water by creating a natural obstacle and temporary water store located close to the source, which would slow and reduce the volume of water reaching the towns. It was important that the scheme gave the communities confidence that the natural environment would be improved and enhanced, due to the importance of the landscape on the tourism sector for the area.

ABOUT THE SCHEME

A combination of different NFM approaches were used to increase the lag time and reduce the risk of a flood occurring. The approaches used were:

Hydro-hedges & hydro-fences -

The hydro-hedge is semi-permeable which will draw in water, as well as holding the structure together. The hydro-fences were created with the help of volunteers from Kendal Conservation Volunteers (KCV) and now act as barrier in controlling the movement and speed of the water. They incorporate the use of living willow in the construction, which is a new technique that creates a living hedge as willow thrives in wet conditions.



Image: Carboncopy.eco

Leaky dams - A total of ten types of dam were installed throughout the old reservoir, which created a new course that water has to navigate and meander through before it reaches the other side.



Image: Carboncopy.eco

Hydro-walls - Installed by a specialist contractor, hydro-walls run across the width of the river and are inflated in times of heavy rain. They work by temporarily holding back the flow of the water and allowing more time for rainwater to infiltrate the ground.

In addition to these techniques used, swales and earth banks were also installed throughout the reservoir to create a wetland watercourse in the upper catchment.

Tree planting - A total of 8000 trees have been planted, including willow, which grows quickly. Volunteers from KCV helped plant the trees along with the EA and CWT.

Birds Park Reservoir now operates in a maze-like way which increases the difficulty for the water to flow from one end of the dam to the other. The new natural structures will hold back the flow of water during storm events and the water which is stored will be released slowly within 10 hours after the flood peak, reducing the potential impact on the properties. The total area of the reservoir is approximately 1km square and as the water enters the dam, a total volume of approximately 10,000 cubic metres of water is stored temporarily as the flow meanders through.

MULTIPLE BENEFITS

Reduced flood risk - 300 people have benefited who live in the immediate area.

Vegetation quality and density - Plant life has improved and become more varied as a result of increased daylight into the old reservoir through removal of old trees.

Increased biodiversity - The area has become full of a variety of insect species and this has allowed for increased sources of food for birds. A variety of Raptor species have since been spotted.

Improved water quality - the NFM approaches used filter out pollutants from the water and remove CO2 from the surrounding air.

DATA COLLECTION

The successfulness of the scheme is being monitored by researchers at Lancaster University who will collect and analyse the data from Birds Park reservoir. The results will be used to influence how NFM may be used elsewhere in Cumbria in the future.

Watch a YouTube video of the project here:
<https://www.youtube.com/watch?v=pNhIZkcP1-4>