



Project Description

The upper and lower Black Moss reservoirs near Barley provide drinking water for Nelson, Lancashire, and were constructed in the late 19th century. A flood risk assessment identified a spillway upgrade was needed to protect dwellings further down the valley in the event of overtopping.

Concrete was deemed expensive and unsightly, so a grassed spillway was the preferred option to increase the water capacity in the event of an overtopping. This would allow water to safely pass by the dam and be directed away from the local properties into an existing waterway, ultimately draining away safely.

The Challenge

The proposed site for the spillway included a section of slope significantly steeper than the surrounding land. Hydraulic modelling showed flood water passing over this area could reach velocities in the region of 6m/sec. Studies such as CIRIA Report 116 have shown that well established grass can withstand flows only up to 4.5m/s for no more than an hour. In addition, with steeper slopes, there is a risk of landslip where subsurface flows can cause blow out further down the slope. A proven reinforced green solution which could prevent surface erosion and stabilise the subsurface preventing landslip was required.

The Solution

ABG's Erosamat Type 3 Turf Reinforcement Mat (TRM) was specified by the Project Engineer to create a fully vegetated surface which could cope with far higher flows than unreinforced turf.

Project Information

Client	United Utilities
Contractor	Askam Construction
Product	Erosamat 3/20Z G50
Quantity	2,000m ²
Benefits	<ul style="list-style-type: none">• Open 3-D matrix binds soil and promotes growth• Allows an engineered green slope• Suitable for high water flows



ABG Erosamat 3/20Z G50

Erosion Control

Grass Reinforced Spillway, Erosamat, Black Moss Reservoir, Barley, UK



Erosamat Type 3 is a three-dimensional matrix of thermally bonded polypropylene fibres which create a tough and flexible erosion control mat. Here Erosamat 3/20Z G50 was used which includes geogrid reinforcement within the structure and provides much higher tensile strength while still allowing a large open surface area to promote grass growth. The integral geogrid was secured to the surface using ground anchors driven through the subsurface and held and tensioned against washers placed at the surface. This bound the top layer of soil to control the risk of uplift in a flood event. Additional "U" pins were placed between the anchors to ensure good surface contact. Topsoil and seed was brushed into the Erosamat Type 3 matrix to promote the quick establishment of vegetation across the area.

The ABG Service

ABG provided full technical design support for both the use of Erosamat and the fixing anchor regime to ensure the success of this project.



Ground anchors driven through soil. Washer placed over cable and tensioned against the geogrid.



Erosamat's open surface area is easy to fill and promotes growth



Steep slope with 6m/s design flow rates

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