

## Case Study: Embankment Stabilisation, Train Robbers Bridge, Ledburn Product: F3 Fire Retardant Rockmat & Timber Stakes



In January 2004 work started on the West Coast Mainline Route Modernisation project. Part of the project was the reinforcing of the embankment at the infamous Train Robbers Bridge at Ledburn. Network Rail and main contractor Balfour Beatty were looking for an economic and effective solution to the problem of burrowing animals undermining the embankment and potential soil erosion on the steepened slopes. The solution had to be effective and easily installed being next to a high speed electrified rail line, robust to prevent burrowing animals and fire retardant in the event of sparks or vandals attempting to set fire to the fibres. The answer was Greenfix F<sup>3</sup> Rockmat a composite of fire retardant sea grass fibres woven into a thick blanket, stitched to an anti-vermin galvanised wire mesh.

The slopes were re-graded as a result of the installation of new signalling posts and gantries. 75mm of top soil was placed on the embankment by sub-contractor Joywheel Ltd. An anchor trench, sufficient to prevent animals from burrowing under the blankets, was dug at the crest and toe of the slope and 300mm timber stakes were used to pin the matting to the subsoil, using the pinning pattern supplied by Greenfix. A native grass seed mix was source and sown under the F<sup>3</sup> Rockmat as it was installed. The F<sup>3</sup> Rockmat is easily manageable at approximately 25kg per 30 square metre roll. In less than five weeks from installation the embankment was fully vegetated. The grasses grow through the fibres, enveloping the mesh to produce a protected grass embankment reinforced by the mesh and is visually attractive.



**Contractor**

**Balfour Beatty**

**Client**

**Network Rail**