

## HANNEYS CROSSING GROVE, OXFORDSHIRE, UNITED KINGDOM

### Reinforced Soil Walls and Slope Reinforcement

#### Problem

The Great Western Main Line [GWML] is one of the oldest and busiest in the country, linking London with the Midlands, the south west and west and most of South Wales. Engineered by Isambard Kingdom Brunel, it was originally founded in 1833 and ran its first trains in 1838.

Now, with freight and passenger traffic continuing to grow rapidly, the line is undergoing a £2.8bn process of upgrade and electrification. According to the train operators, these improvements to infrastructure will allow the introduction of faster cleaner and greener rolling stock which will provide a 20% increase in passenger capacity.

However, expansion and improvement do not come without their fair share of challenges to overcome. Not least of which is the re-engineering of many of the original overbridges, some dating back more than 150 years.

#### Solution

The solution proposed by Tony Gee and Partners with detailed design work undertaken by Maccaferri, required the complete removal of the original ramps and the construction of a pair of replacement ramp structures. As there was no land take, the design was to be undertaken within the footprint of the existing embankments. Several options were considered but a reinforced soil solution was adopted, using the Maccaferri Green Terramesh® and Paragrid system over a load transfer platform done with Paralink.

BAM excavated the subgrade beneath the exiting ramps to a depth of up to 400mm and a mix of Paralink 400 and 600 grades were placed to improve embankment stability. This reinforcement provided the additional strength needed to achieve the equilibrium state, increasing the safety factor against catastrophic failure.

The new reinforced soil approach ramps were constructed using the Green Terramesh® system and installed by BAM Rail under the guidance of Maccaferri.

Courses of Green Terramesh® units combined with Paragrid were placed back to back, between approximately 10.0m and 14.0m apart at the base of the structure, to form the opposing faces of the 60.0m long approach ramps, with a maximum height of 6m.

**Client:** Network Rail

**Designer / Consultant:** Tony Gee & Partners

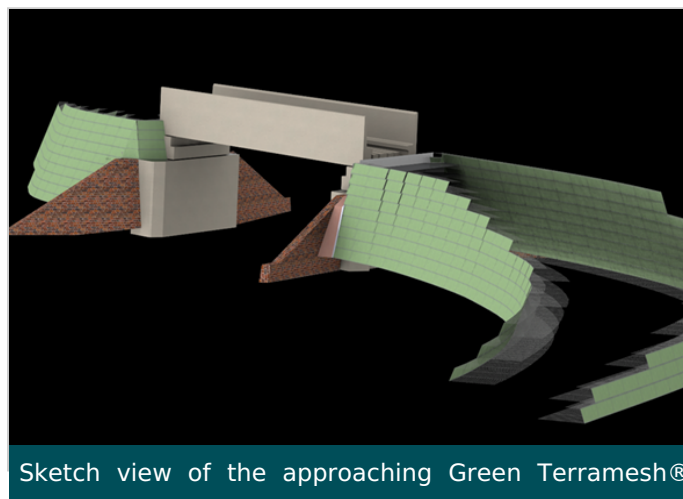
**Contractor:** BAM Rail

**Products used (Qty.)**

**Date of construction:** 03/2016 - 06/2016

[Google Maps](#)

[Google Earth](#)



Sketch view of the approaching Green Terramesh®



The ground investigation identified predominantly soft surrounding soils



Paralink placed over soft soil and wrapped back in an anchor trench



Fourth course of Green Terramesh® being placed on the North ramp



Vegetation is growing on the reinforced ramps



Green Terramesh® ramps vegetated in April 2018