



Tensar®

**WALLS
AND SLOPES**

The new embankment was founded on a load transfer platform incorporating Tensar Basetex and a network of driven piles. TensarTech Greenslope created the steep vegetated embankment slopes.

Green embankment for Green Lane

Tensar helped deliver a steep-sided rail overbridge embankment with a vegetated finish over weak ground, minimising the impact on a Site of Special Scientific Interest (SSSI) in south Wales.

CLIENT'S CHALLENGE

A new embankment was needed for a replacement road bridge over a railway, as part of Network Rail's electrification of the Great Western Mainline. Ground conditions were poor, with deep deposits of very weak alluvial clay, plus the site was in a SSSI. Main contractor Alun Griffiths had to provide a new embankment, up to 5m high, with a natural vegetated finish.

TENSAR SOLUTION

Tensar's TensarTech Greenslope system enabled the 70° slopes to be vegetated, using galvanised steel mesh panels to achieve the 120-year design life required by Network Rail. Tensar's Basetex high-strength geotextile reinforced the 900mm thick load transfer platform, transmitting loads onto the grid of piles supporting the embankment.

Green Lane

Reinforced soil retaining structure

📍 Newport, Wales

BENEFITS

Granular load transfer platform

alternative to reinforced concrete slab

Enabling fast construction

over very weak ground

Minimising environmental impact

within a SSSI

REF TEN386



Tensar's TensarTech Greenslope system comprises layers of geogrid that reinforces embankment fill, positively connected to modular, galvanised steel facing units.

PROJECT BACKGROUND

A new road bridge at Green Lane, near Newport, was needed to provide more headroom for overhead line equipment, as part of Network Rail's Great Western Mainline electrification project between Cardiff and London.

A new, higher approach embankment was also required. Main contractor Alun Griffiths and consultant Tony Gee and Partners had to develop a design that satisfied Network Rail standards, including a 120-year design life, and that was environmentally-sensitive, as the embankment was being built in a Site of Special Scientific Interest.

This meant its footprint had to be minimised, resulting in 70° side slopes that also had to have a natural finish.

Ground conditions were poor, comprising a thin crust over 14m of very weak alluvial clays, requiring driven piles to support the new structure. A 900mm thick granular load transfer platform (LTP), reinforced with Tensar's Basetex high strength geotextile, transmitted loads onto the piles and protected against deep-seated failure of the weak ground.

Using Basetex meant the LTP was faster and more economical to build than a more conventional reinforced concrete slab.

Tensar's TensarTech Greenslope was used to form the 70° embankment side slopes. Layers of geogrid reinforced the granular DoT type 6I embankment fill and were positively connected to modular, galvanised steel facing units that allowed vegetation to establish and which met the 120-year design life requirement.

Client:

Network Rail

Contractor:

Alun Griffiths

Consultant:

Tony Gee & Partners

"Basetex and TensarTech Greenslope delivered an embankment that was quick and easy to build, with minimal environmental impact on the surrounding area; one that will perform for the next 120 years."

Alan Lowe

Tensar Area Civil Engineer

Tensar International Limited

Units 2-4 Cunningham Court Shadsworth Business Park
Blackburn. United Kingdom BB1 2QX

T. +44(0)1254 262431 | Visit: [tensarinternational.com](https://www.tensarinternational.com)

Tensar

Copyright © Tensar International Limited 2019
Registered in England: 503172