Infrastructure UK

Reinforced earthwork embankments for a watercourse realignment, UK

Reinforced earthwork embankment

- **Project name**
  Bewbush Brook Realignment,
  Crawley, West Sussex, UK
- **Client**
  Crest Nicholson, UK
- **Designer/consultant**
  Campbell Reith, UK
- **Contractor/installer**
  Dunton Environmental, UK
- **Products**
  Secumat® 401 G4
  Secudrain® 131 C WD 401 131 C
  Secugrid® 80/20 R6

Naue

Fig. 1: Installation of Naue Secugrid®

Fig. 2: Soil compaction

Managing water, stabilizing land - a challenge for sustainable development

Kilnwood Vale, a large residential development in West Sussex, UK, required the realignment of Bewbush Brook to integrate it with surface water attenuation ponds. The existing steep-sided channel had been originally reconfigured in the 1970s and 80s as part of landfill operations, necessitating a new, permanent realignment. The project-specified erosion control at bends, stable embankments using site-won materials, and low hydraulic permeability to manage fluctuating water levels. Additionally, two earthwork embankments were needed for road crossings over the brook. Given the steep slopes and material reuse requirements, a geosynthetic solution was essential.

Smart geosynthetics for lasting performance

Consulting engineers Campbell Reith collaborated with Naue to develop a reinforced earthwork solution using three key geosynthetic products:

- **Secumat® 401 G4**: Installed at bends to provide permanent erosion control. This three-dimensional erosion control mat stabilizes soil and supports vegetation growth, ensuring long-term stability.
- **Secudrain® 131 C WD 401 131 C**: Used within the embankments to dissipate excess water and prevent structural damage. This geocomposite provides efficient drainage and separation, replacing conventional thick gravel drainage layers.
- **Secugrid® 80/20 R6**: Reinforced the steep-sided embankments, allowing stable slopes using site-won material. The high-strength geogrid ensures structural integrity by reinforcing each fill layer, with approximately 20,000m² used across the project.

Building with nature in mind

The project prioritized environmentally friendly solutions by maximizing material reuse and minimizing resource consumption:

- **Use of site-won materials**: *Less waste, more efficiency.* Avoided the need for imported fill, reducing carbon footprint and landfill waste.
- **Erosion control with vegetation support**: *Sustainable solutions for long-term stability.* Secumat® 401 G4 promotes natural plant growth, ensuring long-term slope stability without additional hard engineering solutions.
- **Efficient drainage**: *Sustainable water management at its best.* Secudrain® replaced conventional gravel layers, reducing excavation and transportation impacts while maintaining high water discharge capacity.
- **Optimized material usage**: *Stronger embankments with fewer resources.* Secugrid® enabled steep, stable embankments with minimal material input, reducing overall resource demand.

By integrating Naue's geosynthetics, the Bewbush Brook realignment successfully combined engineering performance with ecological enhancement, providing a resilient and sustainable riparian corridor for Kilnwood Vale. The project promotes sustainable water management, climate resilience, and resource efficiency by reducing material waste, preventing erosion, and supporting biodiversity. Socially, it strengthens community well-being, while financially, the use of site-won materials and efficient engineering solutions lowers costs and ensures long-term infrastructure durability.