Landfill Drainage

Capping Steep Slopes, Pozidrain G, Silent Valley Landfill, Ebbw Vale, UK

CASE STUDY

Project Information

Client	Silent Valley Waste Ltd
Contractor	Jim Davies Civil Engineering
Products	Pozidrain G7SD surface water drain and Pozidrain G4SD gas drain
Quantity	65,000m² & 60,000m² respectively
Benefits	• Enhanced friction • High flow capacity in both directions • Membrane protection

Project Description

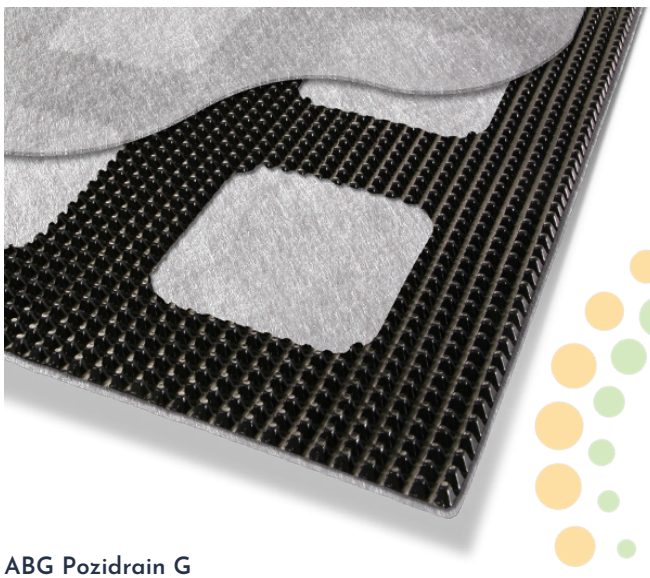
Silent Valley, which runs up from the Welsh town of Ebbw Vale, is being restored and turned into a nature reserve managed by the Blaenau Gwent County Council and Gwent Wildlife Trust. The once post-industrial mining valley is contaminated with metal recovery waste and has been cleaned up. The upper valley modern domestic landfill facility is to be capped off and landscaped to become part of the nature reserve, creating one of the most beautiful natural environments in Gwent.

The Challenge

With the finished landfill profiles incorporating 80m long x 1 in 2.5 slopes, the challenge was to achieve a stable cap without any reprofiling or use of geogrid reinforcement. The aim was to install a multi-layered synthetic cap comprising a 1mm LLDPE textured geomembrane with a drainage capability above and a gas venting capability below.

The challenge was to provide sufficient drainage capacity on both interfaces and adequate interface shear strength to withstand the dead load of the 0.5m cover soil and live loading from the construction traffic during placement of backfill material on this critical slope.

The required slope stability was not possible to achieve using the standard geocomposites typically used for landfill cap drainage. A geocomposite with enhanced performance was required for this 1 in 2.5 slope application.



ABG Pozidrain G
Geocomposite with enhanced frictional properties specifically designed for steep slope installations above and below a capping liner

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The Solution

The unique **Pozidrain G** geocomposite was used to provide drainage, gas venting and membrane protection. Pozidrain G drainage lattice provides additional interlocking and enhanced interface friction with cover soil material on steep slope installations. It has sufficient flow capacity in both long and cross direction to drain cover material and ensure slope stability. Shear box tests against site specific cover soil material and LLDPE geomembrane confirmed good Pozidrain G interface friction performance.
The project was finished on time and at optimum cost resulting in an area fit for a nature reserve.

The ABG Service

ABG proposed the system and provided design and site specific laboratory test results. Site support during the construction and timed deliveries ensured a successful construction.

Proving high friction as construction traffic spreads cover soil, whilst protecting the geomembrane

Pozidrain G with drainage in all directions placed on top of 1mm LLDPE textured liner

Finished, permanently stable, aesthetically pleasing green slope

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